

Louis Berger

January 25, 2016

Elizabeth Franklin, Senior PM
USACE – Kansas City District
601 East 12th Street
Kansas City, Missouri 64106

and

Eugenia Naranjo, PM
USEPA Region II
290 Broadway, 19th Floor
New York, New York 10007

RE: Newark Bay Remedial Investigation / Feasibility Study Oversight
Shoreline Sampling at Rutkowski Park (Bayonne, New Jersey)

Dear Ms. Franklin and Ms. Naranjo:

Louis Berger is supporting the United States Army Corps of Engineers (USACE) and United States Environmental Protection Agency (USEPA) for the Newark Bay Remedial Investigation / Feasibility Study (RI/FS) Oversight program. On June 2, 2015, the Bayonne Nature Club contacted USEPA Region II and notified them of a location with inexplicably distressed vegetation and potential indications of a spill or seep on the shoreline of Newark Bay in Rutkowski Park, Bayonne, New Jersey. This letter report describes the collection and analysis of sediment and groundwater samples by Louis Berger to investigate the area of potential concern on behalf of USACE and USEPA; summarizes the analytical findings; and presents our conclusions. The available data indicate the potential for a source of calcium hydroxide (based on comparatively elevated sediment and groundwater calcium concentrations and pH measurements of 11 and higher) to have adversely impacted the wetland vegetation.

Background Information

The members of the Bayonne Nature Club described an observed area of stressed vegetation as a "seep" or "spill" in their e-mail to USEPA, dated June 2, 2015. They also mentioned that a company doing testing for Honeywell International (Honeywell) in the park in spring 2015 did not test in the particular location that the Club had identified. The Bayonne Nature Club also contacted NJDEP, who assigned Case No. 140619143605 to the area of potential concern. Observations communicated by the Club described a whitish liquid at the ground surface in the potential seep area.

The stressed vegetation was observed in the northeast corner of Rutkowski Park, adjacent to a boardwalk constructed for park visitor access. It should be noted that this location could not have been readily observed during the boat-based reconnaissance of Newark Bay shoreline and habitat areas conducted by Tierra Solutions, Inc. (Tierra) on September 11-15, 2013; therefore, it is not possible to make any conclusions from the reconnaissance survey data regarding the condition of vegetation at that time. Tierra characterized the eastern shoreline near Rutkowski Park as "vegetation" with "habitat/recreational" land use in the 2013 Reconnaissance Survey Report.

A Louis Berger field scientist conducted a site visit (no samples collected) on June 9, 2015 to observe the area of potential concern. The soil and pooled water observed at the location were cloudy and whitish in color and were noticeably different in color than areas of adjacent soil and non-stressed phragmites. The most significant 'staining' was directly adjacent to the boardwalk, on the inland side of the area.

Summary of Field Program

Louis Berger collected environmental samples (sediment and groundwater) from the area of potential concern in Rutkowski Park on August 24, 2015. Sampling and field reconnaissance were conducted according to the USEPA-approved Quality Assurance Project Plan (QAPP) and Health and Safety Plan (HASP). Refer to Attachment 1 for photographs documenting the field work; the area of stressed vegetation was approximately 25 m² (a semi-circular area adjacent to the boardwalk with a radius of approximately 4 m). Laboratory analyses were completed through the USEPA laboratory program [Division of Environmental Science and Assessment (DESA) and Contract Laboratory Program (CLP)] as well as subcontractor laboratories (Microbac Laboratories and GEL Laboratories LLC).

The field program involved the collection of three surface sediment samples [hand auger from 0-60 cm below ground surface (bgs) or to refusal] following SOP No. 6. One sampling location (SED01) was positioned where no vegetation was growing (40 cm from the boardwalk), the second sampling location (SED02) was positioned at the edge of the stressed vegetation area (400 cm from the boardwalk), and the third sampling location (SED03) was positioned in an area of unstressed vegetation (1,520 cm west of the boardwalk). A temporary well point was established in the borehole at Location SED01 with a screen depth from 15-60 cm bgs. Groundwater (whole water only, unfiltered) was then collected using a peristaltic pump (flow less than 5 mL/sec) following a 23 minute purge period following SOP No. 4 and SOP No. 7. Field samples were shipped under chain-of-custody (refer to Attachment 2 for copies of sample management material) following SOP No. 2.

Field instruments were pre-calibrated by the equipment rental provider (refer to Attachment 3 for calibration sheets) and verified by Louis Berger field staff prior to use. Sampling equipment arrived decontaminated following SOP No. 5. Dedicated equipment was used at each sampling location to minimize the need for field decontamination. Borehole cuttings were placed back into the borehole and the work area graded level with the surrounding beach area. Purge water from the temporary well point was containerized. Health and safety monitoring included continuous air monitoring at the ground surface during augering per SOP No. 3.

Results of Characterization Sampling

Results from the August 24, 2015 field program are provided in tables in Attachment 4. Nondetected concentrations (i.e., flags containing a U-qualifier) presented in the tables are equal to the laboratory reporting limits.

- Table 1 lists the results from the three sediment samples (EPA-RUTPARK-SED01 is located closest to the boardwalk where no vegetation was growing; EPA-RUTPARK-SED02 and EPA-RUTPARK-SED03 were positioned radially outwards from the boardwalk). For screening purposes only, the field data were compared to the New Jersey Department of Environmental Protection (NJDEP) Residential Direct Contact Soil Cleanup (RDCSCC). It should be noted that toxaphene has a clean-up criterion of 0.1 mg/kg; toxaphene was reported at nondetected concentrations in the field samples with a reporting limit of 0.21 mg/kg, which exceeds the toxaphene clean-up criterion.
- Table 2 lists the groundwater results from the temporary well point (EPA-RUTPARK-GW01). For screening purposes only, the field data were compared to NJDEP Impact to Groundwater Soil Cleanup Criteria (IGWSCC). No exceedances were observed in the field data.
- Table 3 lists the waste characterization results from the sediment collected at EPA-RUTPARK-SED01 (corrosivity, ignitability, reactivity, and leachate toxicity). For screening purposes only, the field data were compared to 40 CFR Part 261 Subpart C 261.24 Regulations for Hazardous Waste. No exceedances were observed in the field data.

All reported laboratory data are provided in the attached electronic database formatted consistent with USEPA Region II Multimedia Electronic Data Deliverable ("BasicChem" with codes consistent with the June 2015 USEPA Valid Values Reference Manual). Data generated by CLP and DESA laboratories were validated following USEPA National Functional Guidelines. Data generated from subcontractor laboratories were not validated because the effort was a screening investigation intended to identify the presence or absence of contamination that might have impacted the wetland vegetation.

Conclusions

In general, the detected concentrations of the constituents in the sediment samples do not vary between the three sampling locations, especially when comparing EPA-RUTPARK-SED01 and EPA-RUTPARK-SED02 (located within the area of stressed vegetation) with EPA-RUTPARK-SED03 (located in the area of unstressed vegetation). It is expected that the detected concentrations of chloride, sulfide, and sulfate would tend to increase westward of the boardwalk (from EPA-RUTPARK-SED01 to EPA-RUTPARK-SED03) because of the tidal influence. (The borehole for EPA-RUTPARK-SED03 was completely submerged by the incoming tide during sample collection.)

Berger's investigation revealed that two analytical parameters had elevated concentrations in the sediment samples: calcium and pH (and to a lesser degree Magnesium). In an estuarine environment, sodium and chloride are the cations and anions expected to be dominant, with the pH expected to be relatively neutral (pH of 7). Calcium was detected two orders of magnitude greater than sodium in the sediments at EPA-RUTPARK-SED01 (calcium detected at 16,900 mg/kg compared to sodium at 643 mg/kg) and pH was measured at 11.2, suggesting a source of calcium hydroxide to the marsh lands that may be contributing to the stressed vegetation. The groundwater sample (EPA-RUTPARK-GW01) showed similar

results, with a calcium concentration of 240 mg/L, which was a factor of two greater than the sodium concentration of 130 mg/L in the temporary well point. The pH in the groundwater was 12.4, which is consistent with the field pH measurement of 11 measured by the Horiba U52 water quality meter.

The table below summarizes detected calcium concentrations in sediment from various Newark Bay datasets, as reported in Appendix D of Tierra's Phase I and II Data Evaluation and Analysis Report (DEAR, September 2014). Sample EPA-RUTPARK-SED03, collected to the west of the area of potential concern, outside the boundary of the stressed vegetation, appears more comparable to the majority of the referenced mean sediment calcium concentrations from the DEAR.

Sample or Dataset	Detected Calcium Concentration or Arithmetic Mean (mg/kg)
EPA-RUTPARK-SED01 (adjacent to boardwalk; stressed vegetation)	16,900 (*)
EPA-RUTPARK-SED02 (edge of stressed vegetation area)	21,400 (*)
EPA-RUTPARK-SED03 (unstressed phragmites to west)	7,230 (*)
Honeywell Sediment Dataset (Table D-1, 0-0.5 ft., Tierra DEAR)	7,260 (sample count = 63)
NBSA Phase I and II Sediment (Table D-2, 0-0.5 ft., Tierra DEAR)	7,730 (sample count = 100)
USACE Stratified Sampling (Table D-3, 0-0.5 ft., Tierra DEAR)	6,590 (sample count = 22)
NBSA Arthur Kill Sediment (Table D-4, 0-0.5 ft., Tierra DEAR)	7,730 (sample count = 11)
NBSA Hackensack River Sediment (Table D-5, 0-0.5 ft., Tierra DEAR)	12,400 (sample count = 62)
NBSA Kill van Kull Sediment (Table D-6, 0-0.5 ft., Tierra DEAR)	5,720 (sample count = 4)

Note: Asterisk (*) marks individual sample detection. Sample counts are provided for average concentrations.

There is currently no documented source of calcium hydroxide discharge to Rutkowski Park. USEPA participated in a teleconference with Honeywell representatives on June 15, 2015 and was informed that Honeywell did not have any calcium polysulfide injection points in the vicinity of Rutkowski Park. Material Safety Data Sheets reviewed online indicate that calcium polysulfide is a reddish-orange liquid with a pH of 11 to 11.9. Once applied, calcium polysulfide rapidly degrades to calcium hydroxide and sulfur.

It is possible that calcium hydroxide, which has multiple uses for sewage treatment, personal care/beauty products, and in the food industry, or another alkaline liquid waste, could have been discharged or spilled at the area of potential concern.

The boardwalk adjacent to the area of potential concern is located close to a roadway and residential neighborhood, and it is not inconceivable that an individual could have used the location to surreptitiously dispose of an alkaline liquid waste to the surface of the wetland. In addition, a historical aerial photograph from the period of Rutkowski Park's construction indicates that a discharge pipe and ponded area was previously located in the park near the sampling area/stressed vegetation. It is recommended that the agency responsible for construction of the park be contacted to determine whether any information regarding the historical pipe structure is available; an improperly managed former pipe outfall could be discharging to the area of potential concern below the sediment surface.

If you have any questions, please feel free to contact me at 914-798-3721 or AmyMarie Accardi-Dey (914-798-3712).

Sincerely,

LOUIS BERGER



Len Warner
Project Manager

cc: AmyMarie Accardi-Dey (Louis Berger)

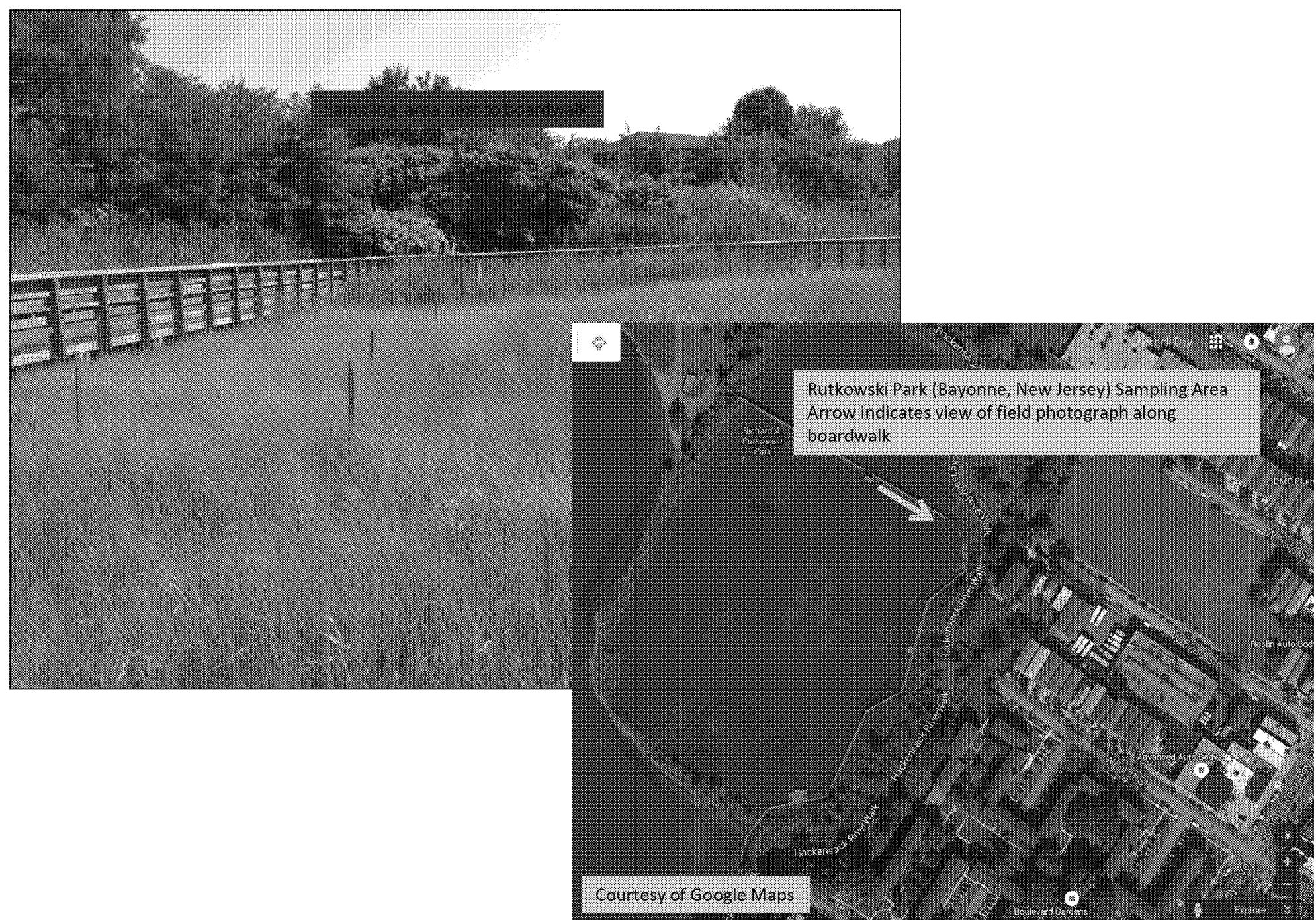
Attachment 1: Field Photographs from August 24, 2015 Sampling at Rutkowski Park

Attachment 2: Copies of Sample Management Material

Attachment 3: Instrument Calibration Report (Horiba and MultiRae)

Attachment 4: Summary Tables of Field Data

ATTACHMENT 1
FIELD PHOTOGRAPHS FROM AUGUST 24, 2015 SAMPLING AT
RUTKOWSKI PARK

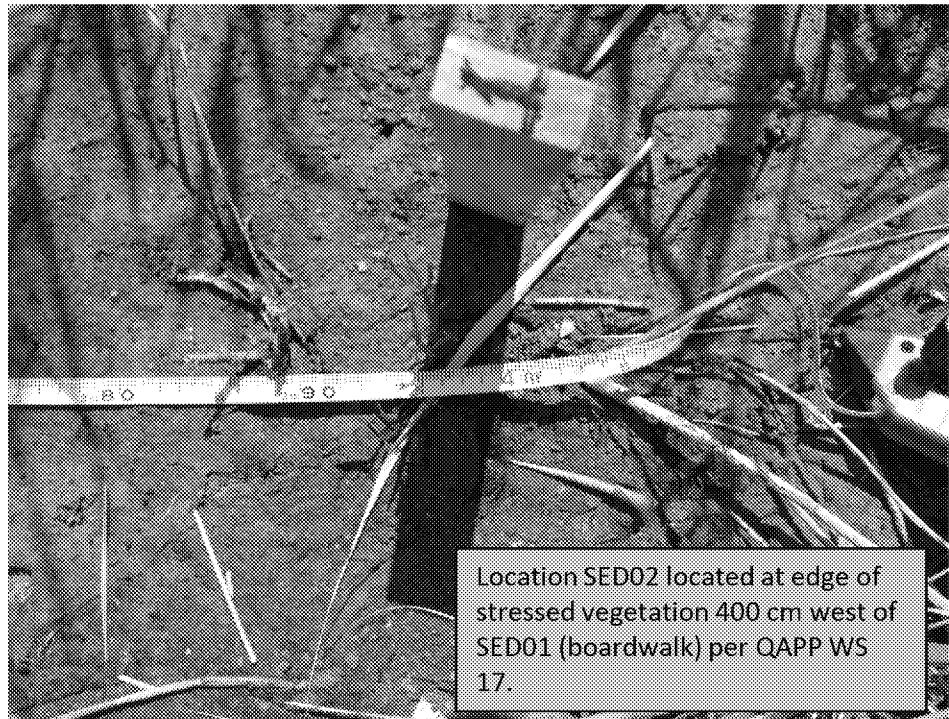
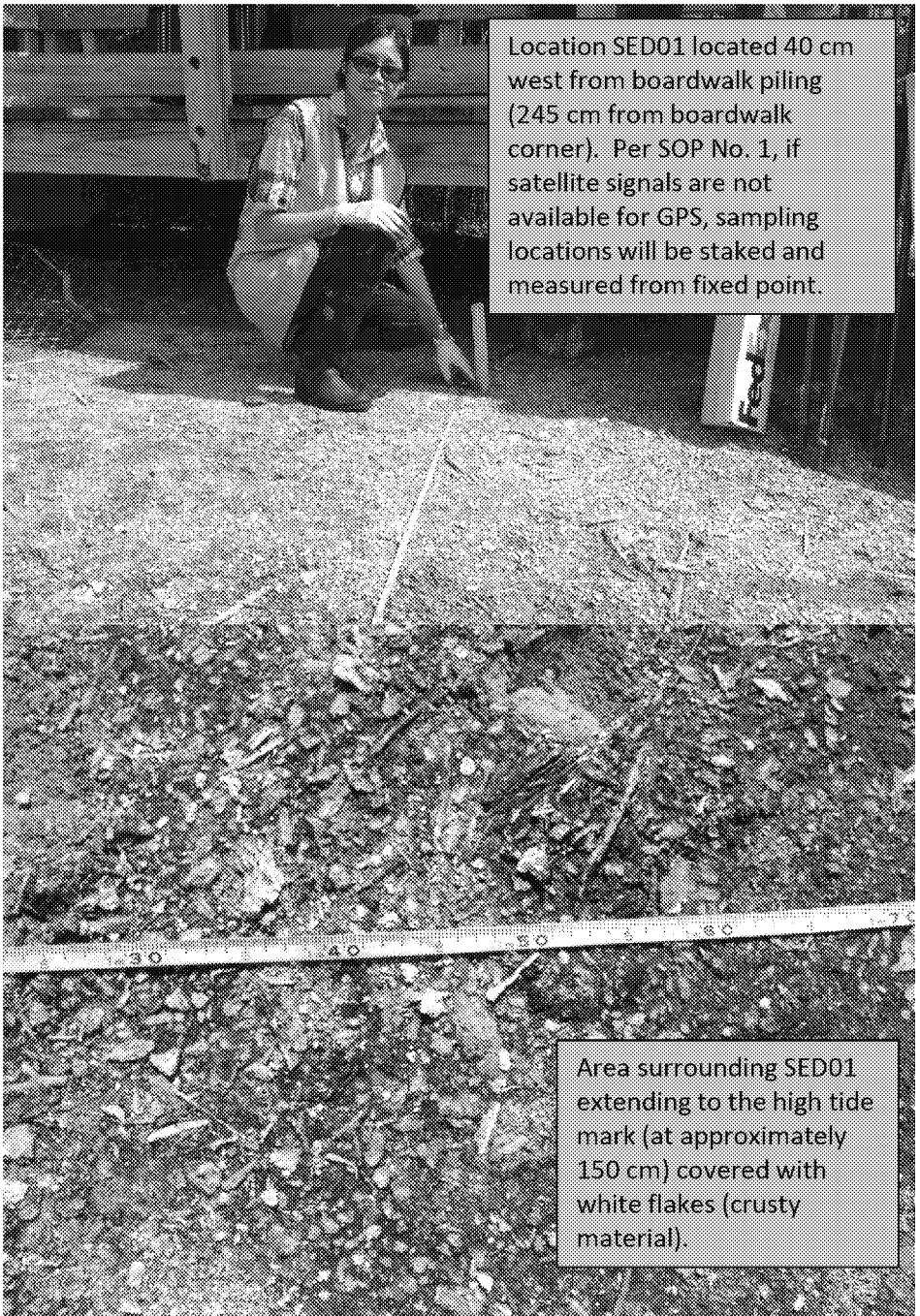


Field Photographs for August 24, 2015 Field Sampling at Rutkowski Park (Bayonne, New Jersey)
Newark Bay Study Area Remedial Investigation and Feasibility Study Oversight

Figure 1



ED_014250_00000343-00007



Field Photographs for August 24, 2015 Field Sampling at Rutkowski Park (Bayonne, New Jersey)
Newark Bay Study Area Remedial Investigation and Feasibility Study Oversight



Figure 2

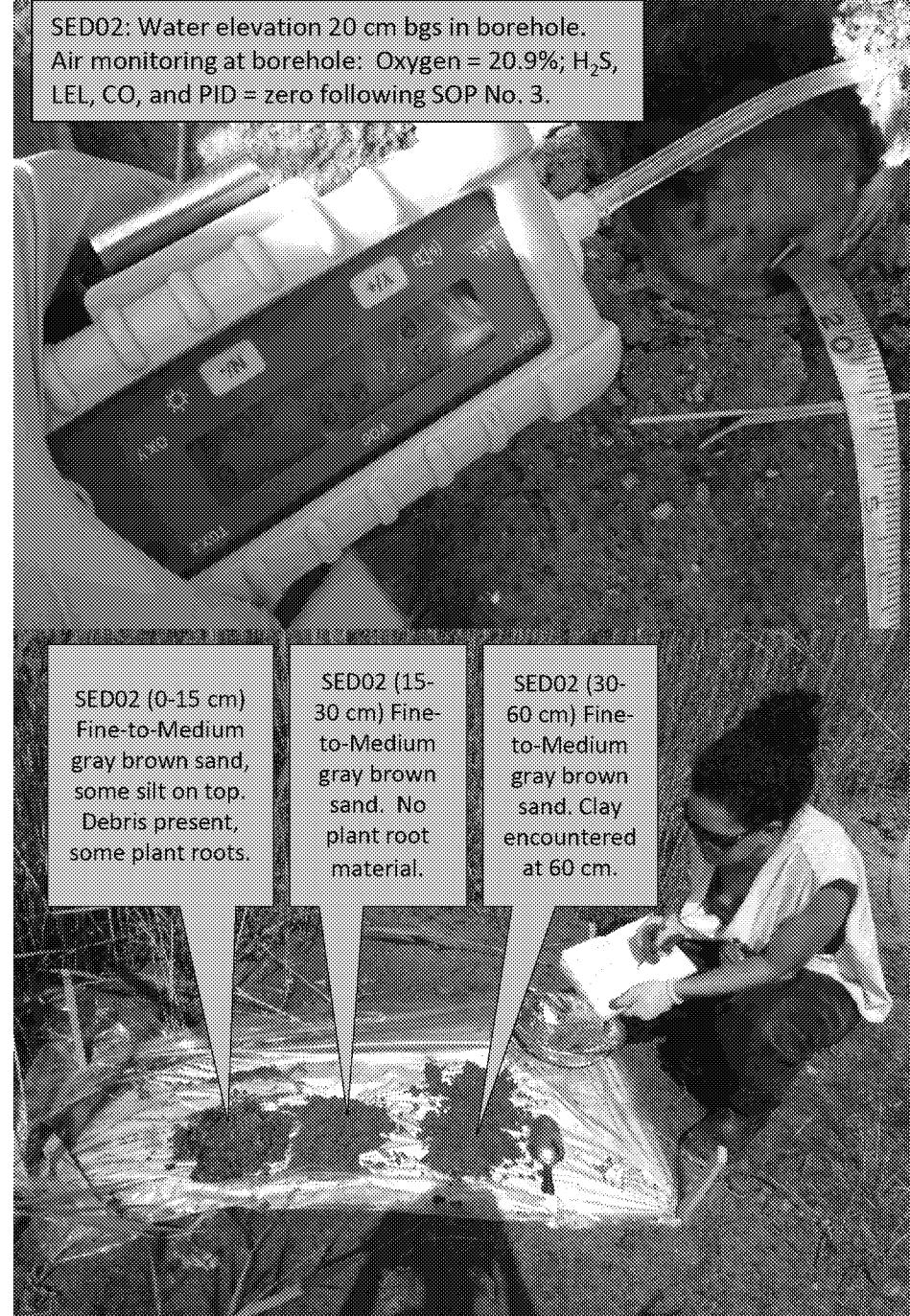
ED_014250_00000343-00008

SED02: Hand auger to depth of 60 cm bgs following SOP No. 6.



Decontaminated bowl, spoon, and auger head arrived on-site (wrapped in aluminum foil) per SOP No. 5.

SED02: Water elevation 20 cm bgs in borehole. Air monitoring at borehole: Oxygen = 20.9%; H₂S, LEL, CO, and PID = zero following SOP No. 3.



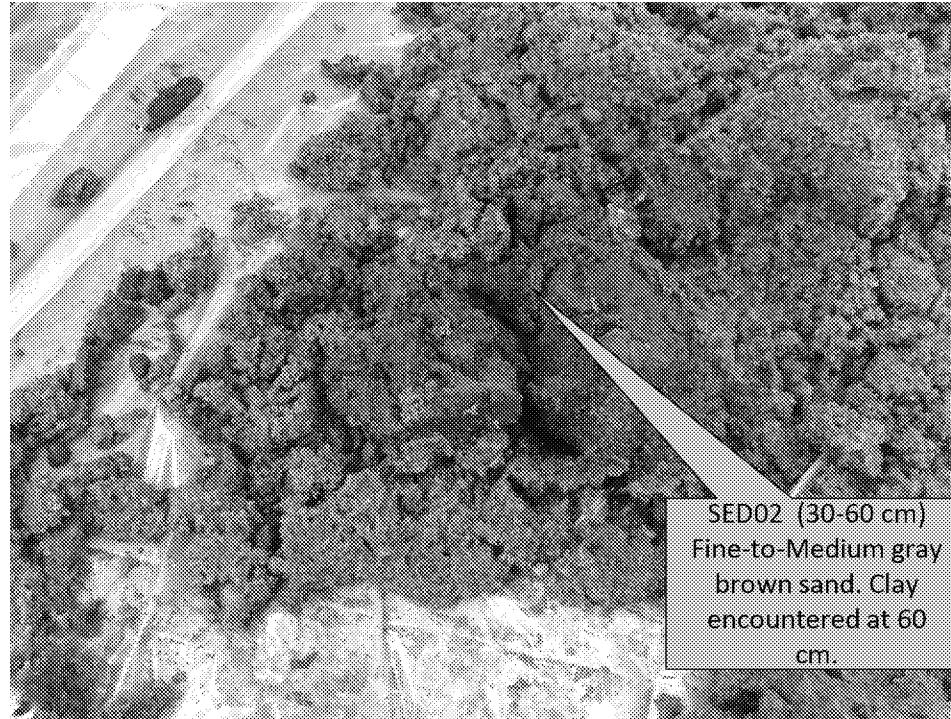
Field Photographs for August 24, 2015 Field Sampling at Rutkowski Park (Bayonne, New Jersey)
Newark Bay Study Area Remedial Investigation and Feasibility Study Oversight

Figure 3

ED_014250_00000343-00009



Composite all intervals into one sample (per SOP No. 6):
EPA-RUTPARK-SED02



SED02 (30-60 cm)
Fine-to-Medium gray
brown sand. Clay
encountered at 60
cm.



Field Photographs for August 24, 2015 Field Sampling at Rutkowski Park (Bayonne, New Jersey)
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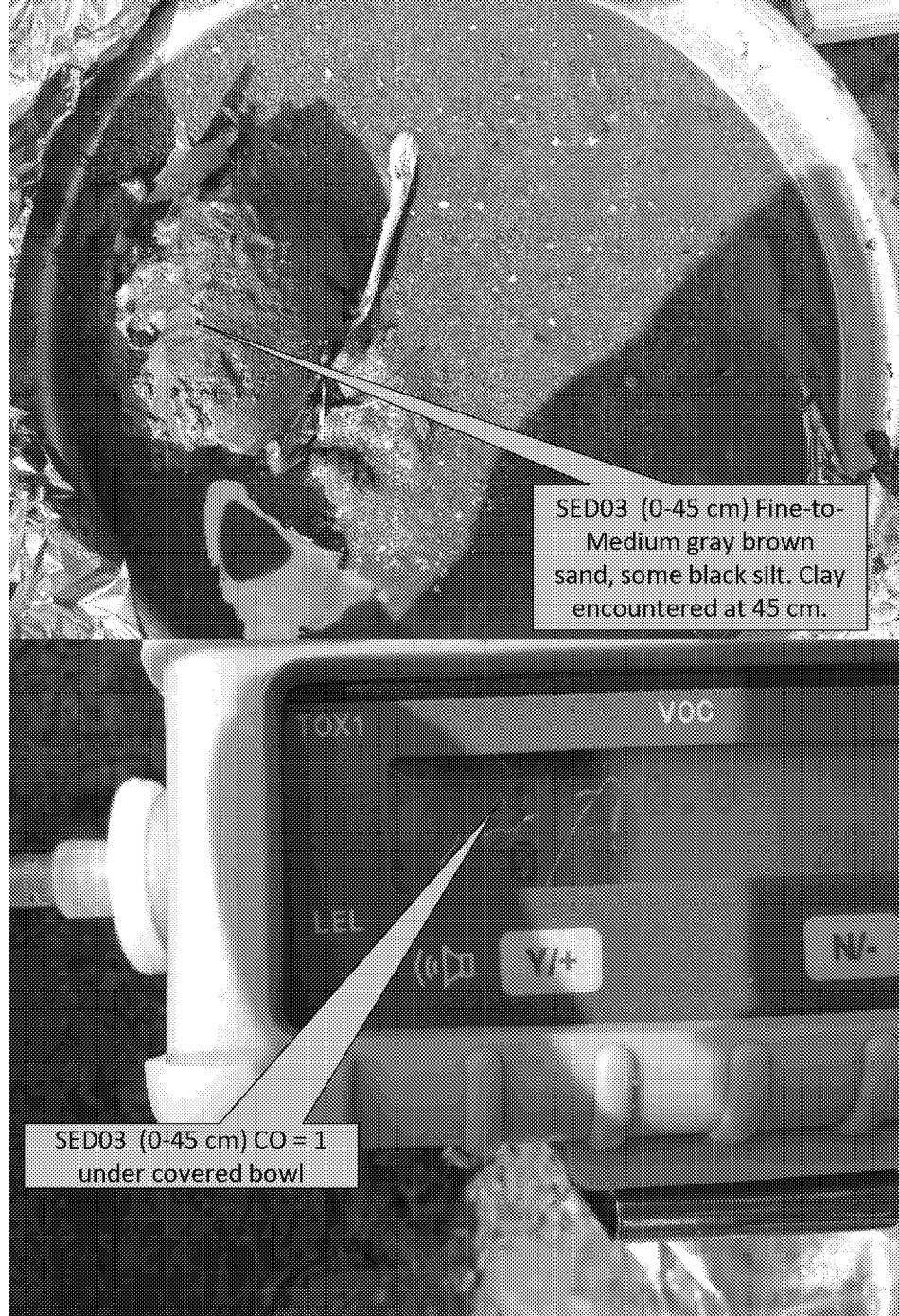
Figure 4

Location SED03 located 1520 cm west of SED01 (boardwalk piling) at edge of grass. Boring submerged by incoming high tide.

Hand auger to depth of 45 cm bgs; borehole collapsed due to incoming tide water and soft sediments.

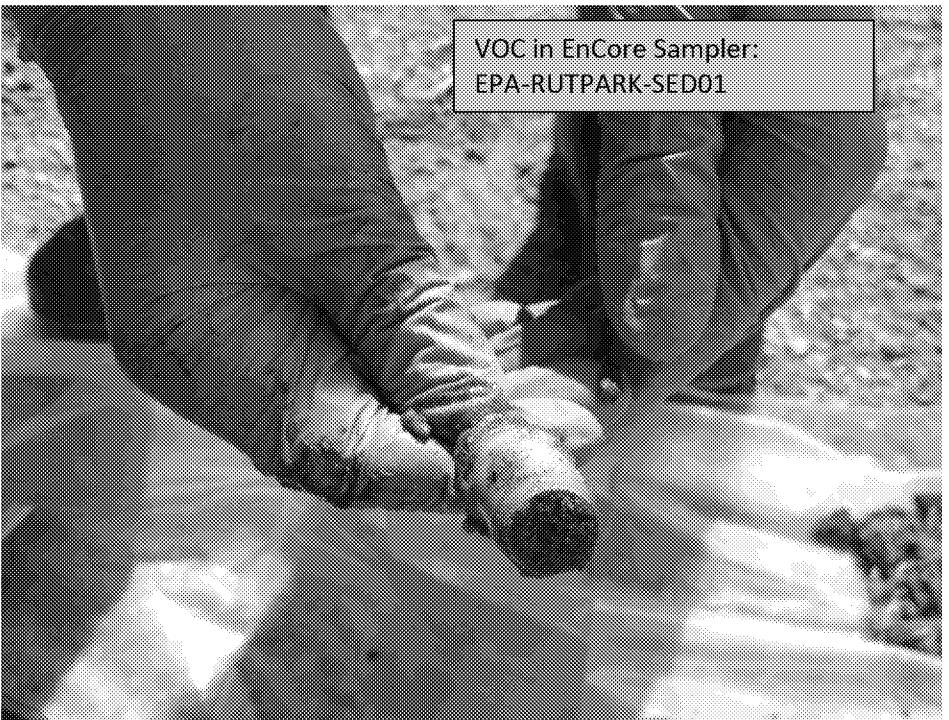
Air monitoring of sample (per SOP No. 3) from sampling bowl covered with aluminum foil (borehole submerged by incoming high tide).

SED03 (0-45 cm) H₂S = 2 under covered bowl!



Field Photographs for August 24, 2015 Field Sampling at Rutkowski Park (Bayonne, New Jersey)
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Figure 5



VOC in EnCore Sampler:
EPA-RUTPARK-SED01



SED01: VOC collected
from auger prior to
mixing (30 cm bgs).

VOC collected from auger head
prior to mixing at 30 cm bgs at
SED01 and 45 cm bgs at SED02.
VOC collected from bowl prior
to mixing for SED03.



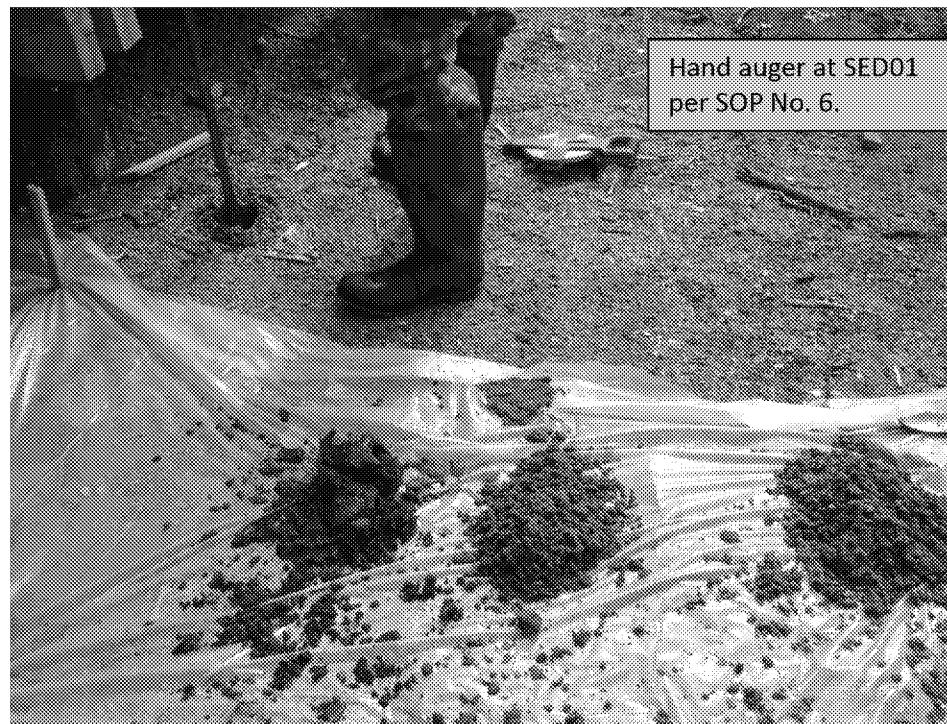
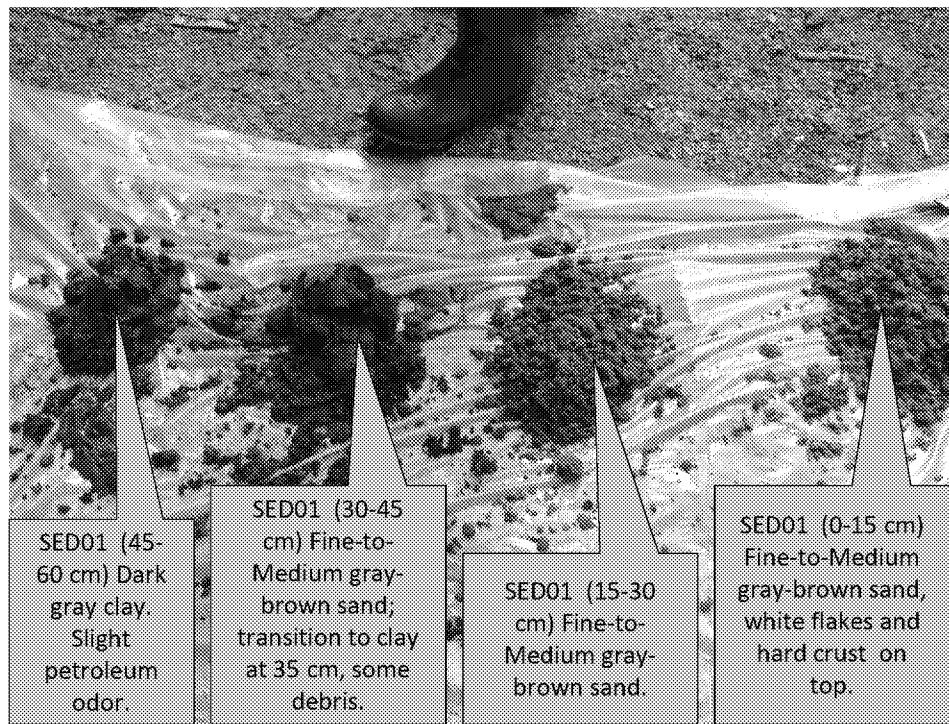
Field Photographs for August 24, 2015 Field Sampling at Rutkowski Park (Bayonne, New Jersey)
Newark Bay Study Area Remedial Investigation and Feasibility Study Oversight

Figure 6



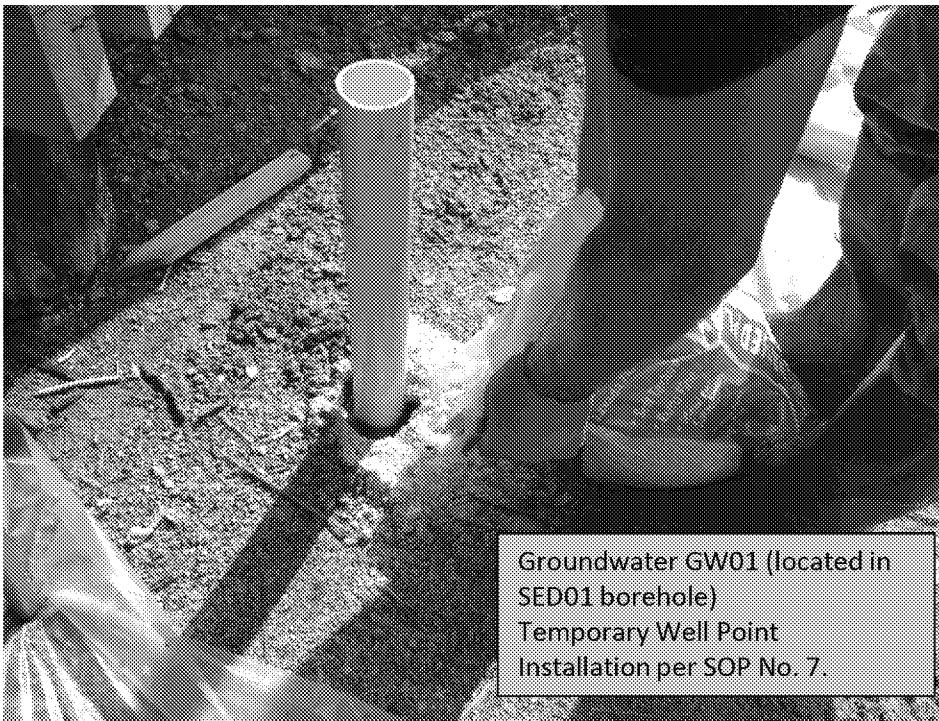
Field Photographs for August 24, 2015 Field Sampling at Rutkowski Park (Bayonne, New Jersey)
Newark Bay Study Area Remedial Investigation and Feasibility Study Oversight

Figure 7



Field Photographs for August 24, 2015 Field Sampling at Rutkowski Park (Bayonne, New Jersey)
Newark Bay Study Area Remedial Investigation and Feasibility Study Oversight

Figure 8



Field Photographs for August 24, 2015 Field Sampling at Rutkowski Park (Bayonne, New Jersey)
Newark Bay Study Area Remedial Investigation and Feasibility Study Oversight

Figure 9



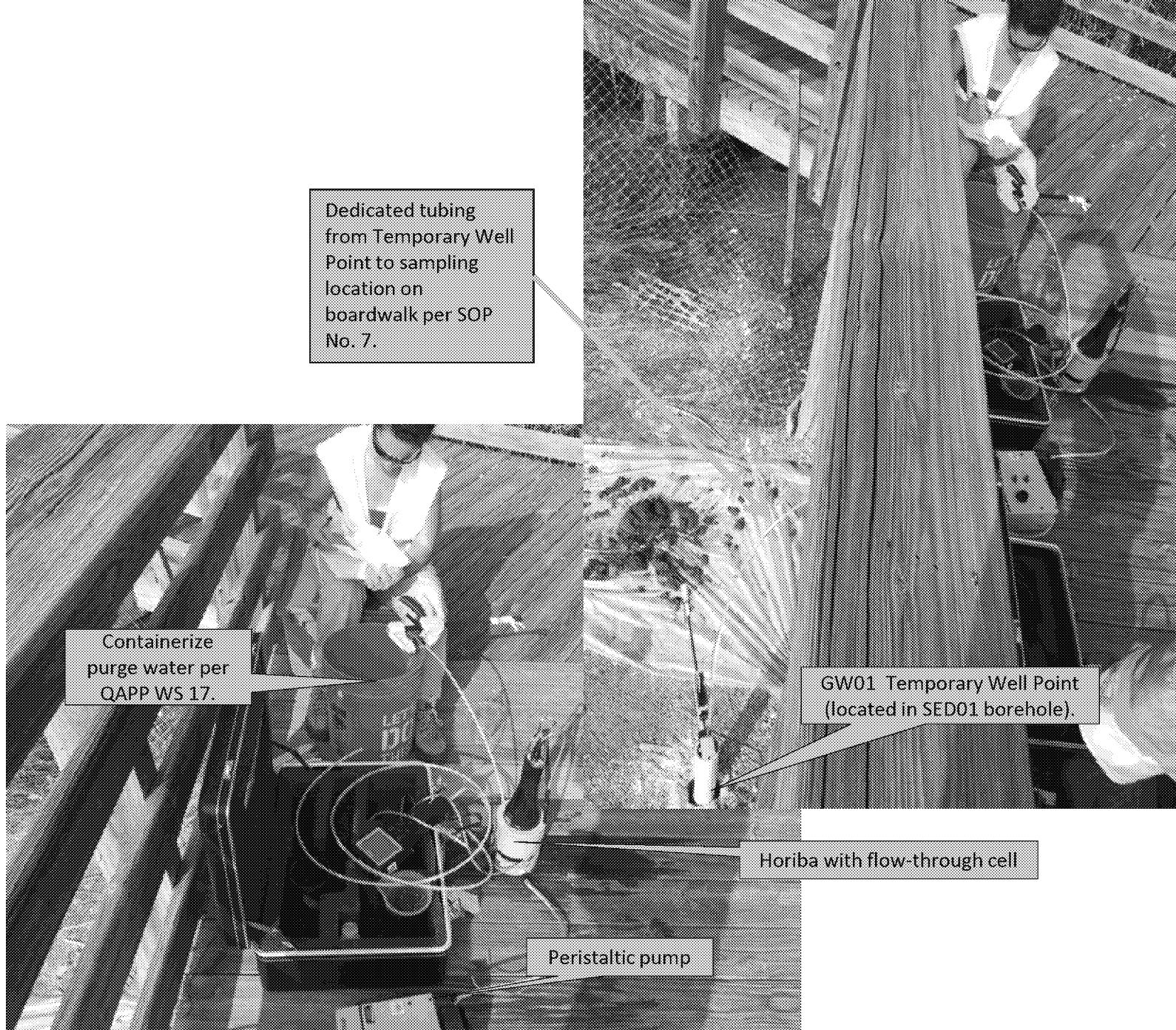
Horiba U52 Model 21084
Pre-calibrated on August 21, 2015
Field verification on August 24 per SOP No. 4 and QAPP WS 22:
Standard pH = 4, Horiba pH reading = 3.28
Standard pH = 7, Horiba pH reading = 6.07



Field Photographs for August 24, 2015 Field Sampling at Rutkowski Park (Bayonne, New Jersey)
Newark Bay Study Area Remedial Investigation and Feasibility Study Oversight

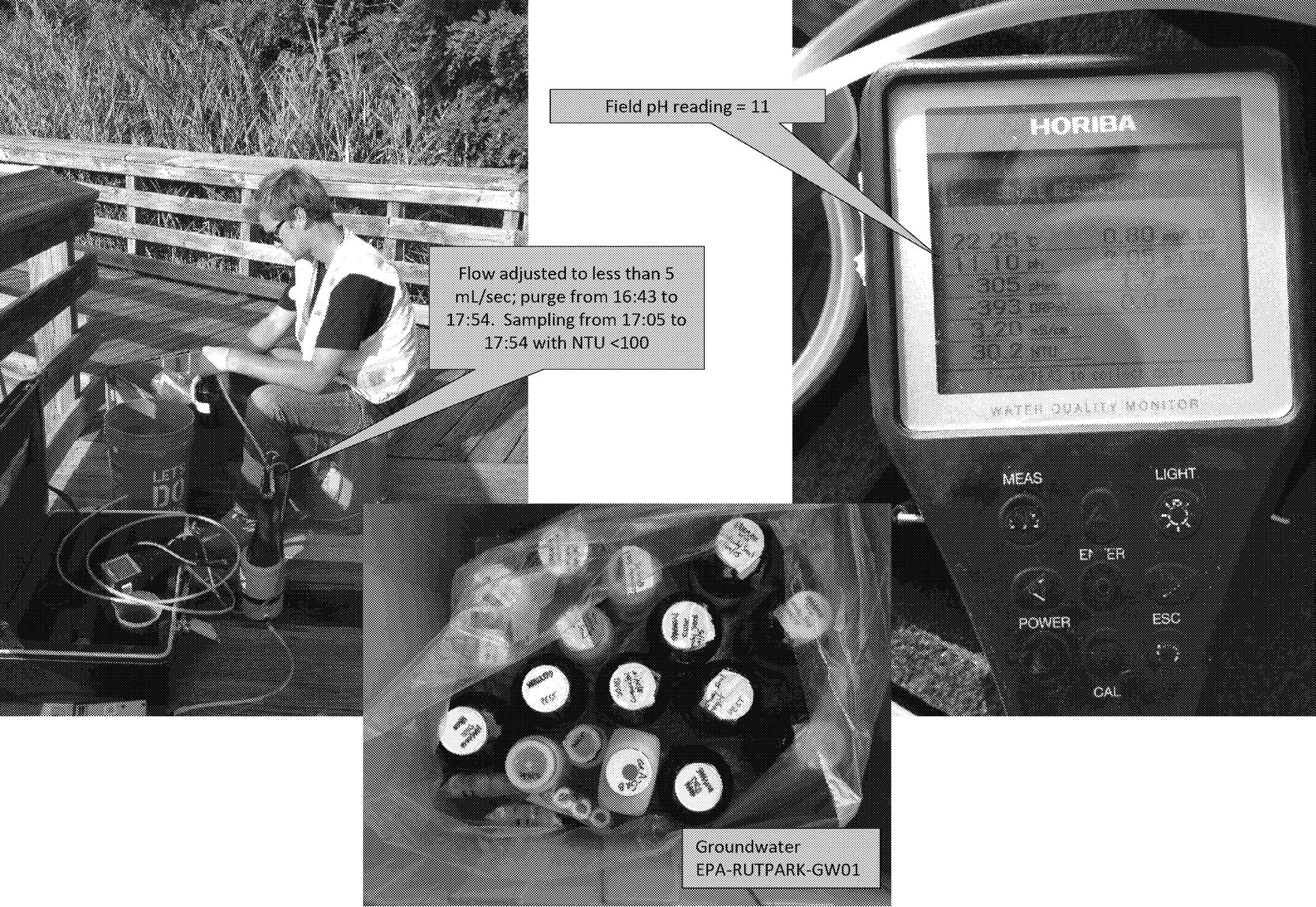


Figure 10



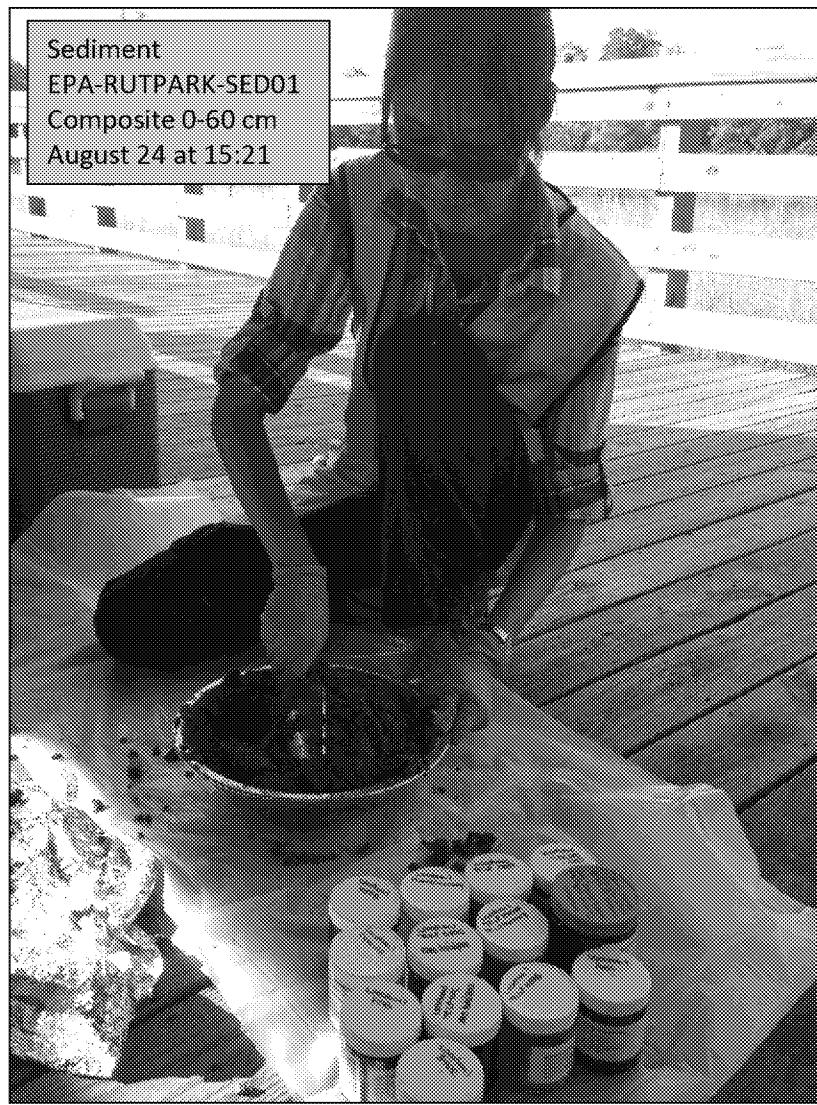
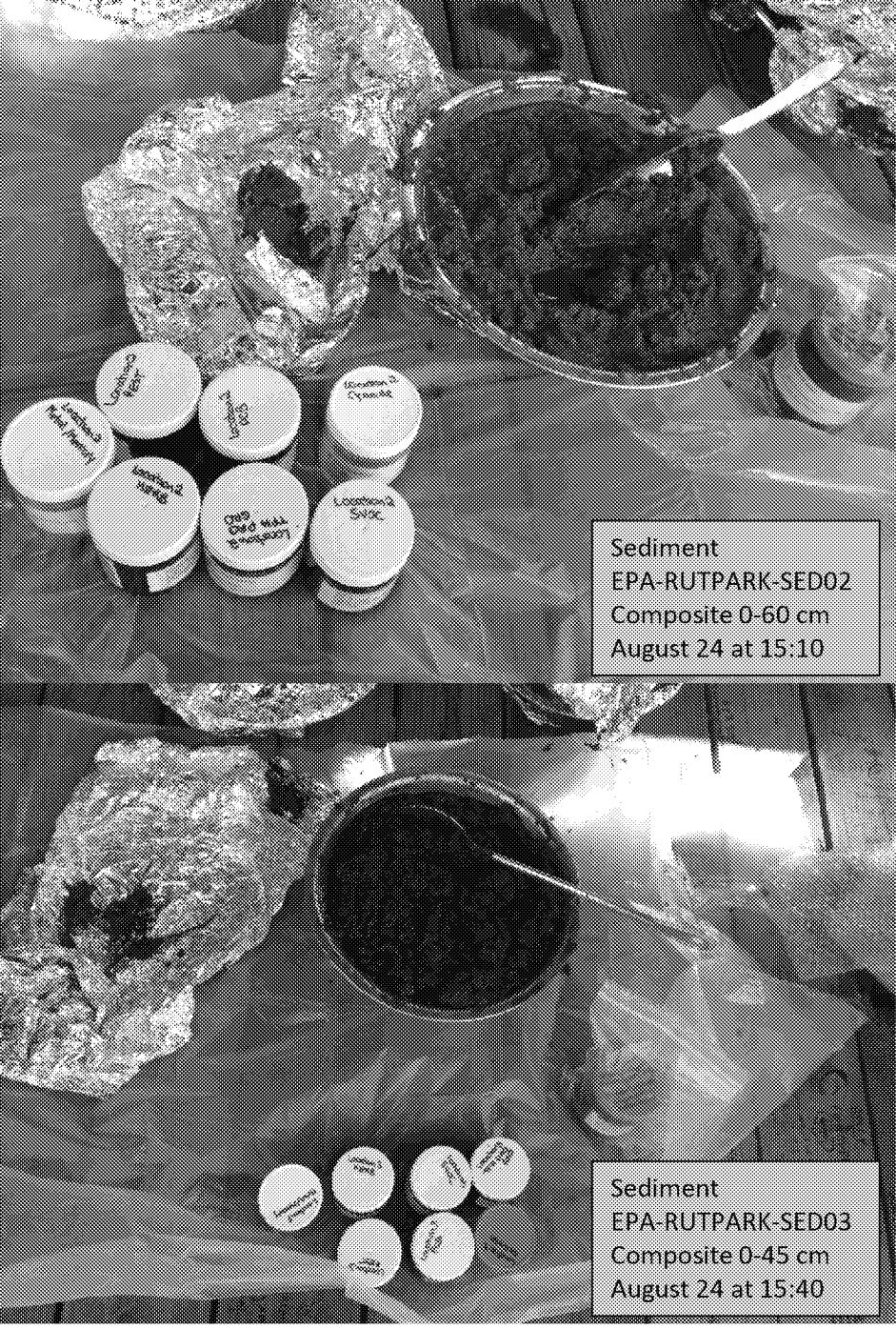
Field Photographs for August 24, 2015 Field Sampling at Rutkowski Park (Bayonne, New Jersey)
Newark Bay Study Area Remedial Investigation and Feasibility Study Oversight

Figure 11



Field Photographs for August 24, 2015 Field Sampling at Rutkowski Park (Bayonne, New Jersey)
Newark Bay Study Area Remedial Investigation and Feasibility Study Oversight

Figure 12



Field Photographs for August 24, 2015 Field Sampling at Rutkowski Park (Bayonne, New Jersey)
Newark Bay Study Area Remedial Investigation and Feasibility Study Oversight



Figure 13



Field Photographs for August 24, 2015 Field Sampling at Rutkowski Park (Bayonne, New Jersey)
Newark Bay Study Area Remedial Investigation and Feasibility Study Oversight

Figure 14

ATTACHMENT 2
COPIES OF SAMPLE MANAGEMENT MATERIAL

USEPA CLP COC (LAB COPY)

DateShipped: 8/24/2015

CarrierName: FedEx

AirbillNo: 7743 4439 3920

CHAIN OF CUSTODY RECORD

Case #: 45466

Cooler #: 02

No: 2-082415-001818-0002

Lab: Chemtech Consulting Group

Lab Contact: Divya Mehta

Lab Phone: 908-789-8900

Analysis Key: VOA=CLP Volatiles, TCLP SVOA=CLP TCLP Semivolatiles, TCLP PEST=CLP TCLP Pesticides, SVOA=CLP Semivolatiles, ARO=CLP Aroclors, PEST=CLP Pesticides, TCLP VOA=CLP TCLP Volatiles

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA CLP COC (LAB COPY)

DateShipped: 8/24/2015

CarrierName: FedEx

AirbillNo: 7743 4438 2599

CHAIN OF CUSTODY RECORD

Case #: 45466

Cooler #: 01

No: 2-082415-000253-0001

Lab: Shealy Environmental Services

Lab Contact: Robert Zhu

Lab Phone: 803-791-9700

Special Instructions: 1) CLP-MET = ICP-MS 11+Metals: Ag, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Ni, Pb, Sb, Se, Tl, V, Zn, and ICP-AES 5-10 Metals: Al, Ca, Fe, K, Mg, Na, and MERCURY
2) TCLP-MET = TCLP ICP-AES 5-10 Metals: Ag, As, Ba, Cd, Cr, Pb, Se, and MERCURY

Shipment for Case Complete? N

Samples Transferred From Chain of Custody #

Analysis Key: TCLP MET=CLP TCLP ICP-AES Metals and Mercury (TAT 21 Days). CLP-MET=CLP Metal and Mercury (TAT 21 Days). CN=CLP Cyanide

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA

DateShipped: 8/24/2015

CarrierName: Courier

AirbillNo:

CHAIN OF CUSTODY RECORD

Newark Bay (Rutkowski Park)/NJ

Contact Name: AmyMarie Accardi-Dey

Contact Phone: 914-798-3712

CLP Case # 45466

No: 2-082415-004746-0006

Cooler #: 06

Lab: DESA (USEPA Region 02 Laboratory)

Lab Phone: 732-906-6886

Special Instructions:	SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #
-----------------------	--

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA

DateShipped: 8/24/2015

CarrierName: Courier

AirbillNo:

CHAIN OF CUSTODY RECORD

Newark Bay (Rutkowski Park)/NJ

Contact Name: AmyMarie Accardi-Dey

Contact Phone: 914-798-3712

CLP Case #45466

No: 2-082415-005613-0007

Cooler #: 06

Lab: DESA (USEPA Region 02 Laboratory)

Lab Phone: 732-906-6886

Special Instructions: 1) Cl, NO₃+NO₂, Sulfate, Orthophosphate = Chloride, Nitrate+Nitrite, Sulfate, and Orthophosphate
2) Please analyze nitrite and nitrate and orthophosphate within 48 hours of sample collection

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA

DateShipped: 8/24/2015

CarrierName: FedEx

AirbillNo: 7743 4440 5836

CHAIN OF CUSTODY RECORD

Newark Bay (Rutkowski Park)/NJ

Contact Name: AmyMarie Accardi-Dey

Contact Phone: 914-798-3712

No: 2-082415-003806-0005

Cooler #: 05

Lab: Microbac Laboratory - Indiana

Lab Phone: 219-769-8378

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	Lab QC
EPA-RUTPARK-GW01	GW01		TPH-GRO (SW846 8260)	Groundwater	8/24/2015	3	40ml vial	HCl pH<2	
EPA-RUTPARK-GW01	GW01		TPH-DRO (SW846 8015)	Groundwater	8/24/2015	1	1L Amber Glass Container	None	
EPA-RUTPARK-GW-TB	Trip Blank		TPH-GRO (SW846 8260)	Water	8/24/2015	2	40ml vial	HCl pH<2	
EPA-RUTPARK-SED01	SED01		Cl, NO ₃ +NO ₂ , Orthophosphate, SO ₄ & Sulfide, TOC	Sediment	8/24/2015	1	8 oz. glass container	None	
EPA-RUTPARK-SED01	SED01		Corrosivity, Ignitability, Reactive Sulfide & CN	Sediment	8/24/2015			None	
EPA-RUTPARK-SED01	SED01		TPH (SW846 8015)	Sediment	8/24/2015	1	4 oz. glass container	None	
EPA-RUTPARK-SED02	SED02		Cl, NO ₃ +NO ₂ , Orthophosphate, SO ₄ & Sulfide, TOC	Sediment	8/24/2015	1	8 oz. glass container	None	
EPA-RUTPARK-SED02	SED02		TPH (SW846 8015)	Sediment	8/24/2015	1	4 oz. glass container	None	
EPA-RUTPARK-SED03	SED03		Cl, NO ₃ +NO ₂ , Orthophosphate, SO ₄ & Sulfide, TOC	Sediment	8/24/2015	1	8 oz. glass container	None	
EPA-RUTPARK-SED03	SED03		TPH (SW846 8015)	Sediment	8/24/2015	1	4 oz. glass container	None	

Special Instructions:	SAMPLES TRANSFERRED FROM	
	CHAIN OF CUSTODY #	
1) TPH (SW846 80(5)) = TPH-DRO and TPH-GRO 2) Cl, NO ₃ +NO ₂ , orthophosphate, SO ₄ , sulfide, TOC = chloride, nitrite and nitrate, orthophosphate, sulfate, sulfide, total organic carbon		

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
Sample manager officer	Louis Berger	8/25/2015 5:30pm			

USEPA

DateShipped: 8/24/2015
CarrierName: FedEx
AirbillNo: 7743 4440 58

CHAIN OF CUSTODY RECORD

Newark Bay (Rutkowski Park)/NJ
Contact Name: AmyMarie Accardi-De
Contact Phone: 914-798-3712

No: 2-082415-003806-0005

Cooler #: 05

Lab: Microbac Laboratory - Indiana
Lab Phone: 219-769-8378

SPECIAL INSTRUCTIONS: _____

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
Sample management office	Stiles Ward / Louis Berger	8/25/2015 5:30 pm			

USEPA

DateShipped: 8/24/2015
CarrierName: FedEx
AirbillNo: 7743 4440 253

CHAIN OF CUSTODY RECORD

Newark Bay (Rutkowski Park)/NJ
Contact Name: AmyMarie Accardi-Dey
Contact Phone: 914-798-3712

No: 2-082415-003137-0004

Cooler #: 04
oratory - Ohio
800-373-4071

Special Instructions: Please login the samples using Microbac-Indiana batch number (work group)	SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #
---	--

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

USEPA

DateShipped: 8/24/2015
CarrierName: FedEx
AirbillNo: 7743 4439 978

CHAIN OF CUSTODY RECORD

Newark Bay (Rutkowski Park)/NJ
Contact Name: AmyMarie Accardi-Dey
Contact Phone: 914-798-3712

No: 2-082415-002541-0003

Cooler #: 03

Lab: GEL Laboratories, LLC
Lab Phone: 843-556-8171

SPECIAL INSTRUCTIONS: Please login the sample using Microbac batch number (work group)

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt

CLP Sample # BC3B1

Tag: 9
Date: 8/24/2015
Location: SED01
Analyses: CLP TCLP Volatiles
Preservation: None
Case # 45466

CLP Sample # BC3B1

Tag: 10
Date: 8/24/2015
Location: SED01
Analyses: CLP TCLP Semivolatiles
Preservation: None
Case # 45466

CLP Sample # BC3B1

Tag: 11
Date: 8/24/2015
Location: SED01
Analyses: CLP TCLP Pesticides
Preservation: None
Case # 45466

CLP Sample # MBC3B1

Tag: 12
Date: 8/24/2015
Location: SED01
Analyses: CLP TCLP ICP-AES Metals and Mercury (TAT 21 Days)
Preservation: None
Case # 45466

CLP Sample # BC3B1

Tag: 2
Date: 8/24/2015
Location: SED01
Analyses: CLP Semivolatiles
Preservation: None
Case # 45466

CLP Sample # BC3B1

Tag: 3
Date: 8/24/2015
Location: SED01
Analyses: CLP Aroclors
Preservation: None
Case # 45466

CLP Sample # BC3B1

Tag: 4
Date: 8/24/2015
Location: SED01
Analyses: CLP Pesticides
Preservation: None
Case # 45466

CLP Sample # MBC3B1

Tag: 7
Date: 8/24/2015
Location: SED01
Analyses: CLP Metal and Mercury (TAT 21 Days)
Preservation: None
Case # 45466

CLP Sample # MBC3B1

Tag: 8
Date: 8/24/2015
Location: SED01
Analyses: CLP Cyanide
Preservation: None
Case # 45466

CLP Sample # BC3B1

Tag: 1
Date: 8/24/2015
Location: SED01
Analyses: CLP Volatiles
Preservation: None
Case # 45466

CLP Sample # BC3B2

Tag: 17
Date: 8/24/2015
Location: SED02
Analyses: CLP Semivolatiles
Preservation: None
Case # 45466

CLP Sample # BC3B2

Tag: 18
Date: 8/24/2015
Location: SED02
Analyses: CLP Aroclors
Preservation: None
Case # 45466

CLP Sample # BC3B2

Tag: 20
Date: 8/24/2015
Location: SED02
Analyses: CLP Pesticides
Preservation: None
Case # 45466

CLP Sample # MBC3B2

Tag: 23
Date: 8/24/2015
Location: SED02
Analyses: CLP Metal and Mercury (TAT 21 Days)
Preservation: None
Case # 45466

CLP Sample # MBC3B2

Tag: 24
Date: 8/24/2015
Location: SED02
Analyses: CLP Cyanide
Preservation: None
Case # 45466

CLP Sample # BC3B2

Tag: 16
Date: 8/24/2015
Location: SED02
Analyses: CLP Volatiles
Preservation: None
Case # 45466

CLP Sample # MBC3B3

Tag: 33
Date: 8/24/2015
Location: SED03
Analyses: CLP Cyanide
Preservation: None
Case # 45466

CLP Sample # BC3B3

Tag: 25
Date: 8/24/2015
Location: SED03
Analyses: CLP Volatiles
Preservation: None
Case # 45466

CLP Sample # BC3B3

Tag: 26
Date: 8/24/2015
Location: SED03
Analyses: CLP Semivolatiles
Preservation: None
Case # 45466

CLP Sample # BC3B3

Tag: 27
Date: 8/24/2015
Location: SED03
Analyses: CLP Aroclors
Preservation: None
Case # 45466

CLP Sample # BC3B3

Tag: 29
Date: 8/24/2015
Location: SED03
Analyses: CLP Pesticides
Preservation: None
Case # 45466

CLP Sample # MBC3B3

Tag: 32
Date: 8/24/2015
Location: SED03
Analyses: CLP Metal and Mercury (TAT 21 Days)
Preservation: None
Case # 45466

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: Ammonia (DESA C-122)
Preservation: H₂SO₄ pH<2
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: TCL SVOC (SOM02.2)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: TCL SVOC (SOM02.2)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: TCL PCB Aroclors (SOM02.2)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: TCL PCB Aroclors (SOM02.2)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: TCL Pesticides (SOM02.2)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: TCL Pesticides (SOM02.2)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: Herbicides (SW846 8151)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: Herbicides (SW846 8151)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: TPH-GRO (SW846 8260)
Preservation: HCl pH<2
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: TPH-GRO (SW846 8260)
Preservation: HCl pH<2
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: TPH-GRO (SW846 8260)
Preservation: HCl pH<2
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: TPH-DRO (SW846 8015)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: TPH-DRO (SW846 8015)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: TCL VOC (SOM02.2)
Preservation: HCl pH<2
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: TCL VOC (SOM02.2)
Preservation: HCl pH<2
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: TCL VOC (SOM02.2)
Preservation: HCl pH<2
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: Cyanide (ISM02.2)
Preservation: NaOH pH>12
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: Cl, NO₃+NO₂, Sulfate, Orthophosphate
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: Total Phosphorous (DESA C-68)
Preservation: H₂SO₄ pH<2
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: Sulfide (DESA C-115)
Preservation: ZnAc+NaOH pH>9
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: Total Organic Carbon (DESA C-83)
Preservation: H₂SO₄ pH<2
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: Total Organic Carbon (DESA C-83)
Preservation: H₂SO₄ pH<2
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: Gross Alpha and Beta (SW846 9310)
Preservation: HNO₃ pH<2
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW01

Date: 8/24/2015
Location: GW01
Analyses: TAL Metals and Mercury (ISM02.2)
Preservation: HNO₃ pH<2
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW-TB

Date: 8/24/2015
Location: Trip Blank
Analyses: TPH-GRO (SW846 8260)
Preservation: HCl pH<2
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW-TB

Date: 8/24/2015
Location: Trip Blank
Analyses: TPH-GRO (SW846 8260)
Preservation: HCl pH<2
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW-TB

Date: 8/24/2015
Location: Trip Blank
Analyses: TCL VOC (SOM02.2)
Preservation: HCl pH<2
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW-TB

Date: 8/24/2015

Location: Trip Blank

Analyses: TCL VOC (SOM02.2)

Preservation: HCl pH<2

Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-GW-TB

Date: 8/24/2015

Location: Trip Blank

Analyses: TCL VOC (SOM02.2)

Preservation: HCl pH<2

Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-SED01

Date: 8/24/2015
Location: SED01
Analyses: TPH (SW846 8015)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-SED01

Date: 8/24/2015
Location: SED01
Analyses: Herbicides (SW846 8151)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-SED01

Date: 8/24/2015
Location: SED01
Analyses: TCLP Herbicides (SW846 8151)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-SED01

Date: 8/24/2015
Location: SED01
Analyses: Corrosivity, Ignitability, Reactive Sulfide & CN
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-SED01

Date: 8/24/2015
Location: SED01
Analyses: Cl, NO₃+NO₂, Orthophosphate, SO₄ & Sulfide, TOC
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-SED02

Date: 8/24/2015
Location: SED02
Analyses: TPH (SW846 8015)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-SED02

Date: 8/24/2015
Location: SED02
Analyses: Herbicides (SW846 8151)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-SED02

Date: 8/24/2015
Location: SED02
Analyses: Cl, NO₃+NO₂, Orthophosphate, SO₄ & Sulfide, TOC
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-SED03

Date: 8/24/2015
Location: SED03
Analyses: TPH (SW846 8015)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-SED03

Date: 8/24/2015
Location: SED03
Analyses: Herbicides (SW846 8151)
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-SED03

Date: 8/24/2015
Location: SED03
Analyses: Cl, NO₃+NO₂, Orthophosphate, SO₄ & Sulfide, TOC
Preservation: None
Newark Bay RI/FS Oversight (Rutkowski Park)

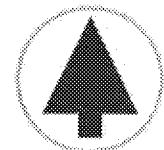
Sample # EPA-RUTPARK-SED-TB

Date: 8/24/2015
Location: Trip Blank
Analyses: TPH-GRO (SW846 8260)
Preservation: HCl
Newark Bay RI/FS Oversight (Rutkowski Park)

Sample # EPA-RUTPARK-SED-TB

Date: 8/24/2015
Location: Trip Blank
Analyses: TPH-GRO (SW846 8260)
Preservation: HCl
Newark Bay RI/FS Oversight (Rutkowski Park)

ATTACHMENT 3
INSTRUMENT CALIBRATION REPORT (HORIBA AND MULTIRAE)



INSTRUMENT CALIBRATION REPORT

Pine Environmental Services, LLC.

92 North Main St, Building 20
Windsor, NJ 08561
Toll-free: (800) 301-9663

Pine Environmental Services, Inc.

Instrument ID 21084

Description Horiba U-52

Calibrated 8/21/2015 2:48:19PM

Manufacturer	Horiba	State Certified
Model Number	U-52	Status Pass
Serial Number/ Lot Number	GRWEXW6K	Temp °C 25
Location	New Jersey	Humidity % 49
Department		

Calibration Specifications

Group # 1

Group Name PH

Stated Accy Pct of Reading

Range Acc % 0.0000

Reading Acc % 3.0000

Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
7.01 / 7.01	PH	7.00	PH	7.00	7.00	0.00%	Pass
4.01 / 4.01	PH	4.00	PH	4.00	4.00	0.00%	Pass

Group # 2

Group Name Turbidity

Stated Accy Pct of Reading

Range Acc % 0.0000

Reading Acc % 3.0000

Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
0.00 / 0.00	NTU	0.00	NTU	0.00	0.00	0.00%	Pass
800.00 / 800.00	NTU	800.00	NTU	800.00	800.00	0.00%	Pass

Group # 3

Group Name Conductivity

Stated Accy Pct of Reading

Range Acc % 0.0000

Reading Acc % 3.0000

Plus/Minus 0.000

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
0.718 / 0.718	ms/cm	0.718	ms/cm	0.718	0.718	0.00%	Pass
5.000 / 5.000	ms/cm	5.000	ms/cm	5.000	5.000	0.00%	Pass
80.000 / 80.000	ms/cm	80.000	ms/cm	80.000	80.000	0.00%	Pass

Group # 4

Group Name Redox (ORP)

Stated Accy Pct of Reading

Range Acc % 0.0000

Reading Acc % 3.0000

Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
240.00 / 240.00	mv	240.00	mv	240.00	240.00	0.00%	Pass

Group # 5

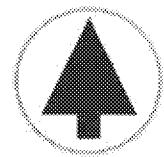
Group Name Dissolved Oxygen Zero

Stated Accy Pct of Reading

Range Acc % 0.0000

Reading Acc % 3.0000

Plus/Minus 0.00



INSTRUMENT CALIBRATION REPORT

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Windsor, NJ 08561
Toll-free: (800) 301-9663

Pine Environmental Services, Inc.

Instrument ID 21084

Description Horiba U-52

Calibrated 8/21/2015 2:48:19PM

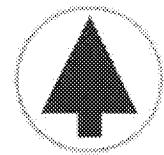
Group # 5 Group Name Dissolved Oxygen Zero Stated Accy Pct of Reading				Range Acc % 0.0000 Reading Acc % 3.0000 Plus/Minus 0.00			
<u>Nom In Val / In Val</u> 0.00 / 0.00	<u>In Type</u> mg/L	<u>Out Val</u> 0.00	<u>Out Type</u> mg/L	<u>Fnd As</u> 0.00	<u>Lft As</u> 0.00	<u>Dev%</u> 0.00%	<u>Pass/Fail</u> Pass
Group # 6 Group Name Temperature DO Span Stated Accy Plus / Minus				Range Acc % 0.0000 Reading Acc % 0.0000 Plus/Minus 0.00			
<u>Nom In Val / In Val</u> 20.00 / 25.00	<u>In Type</u> degrees C	<u>Out Val</u> 8.11	<u>Out Type</u> mg/L	<u>Fnd As</u> 8.11	<u>Lft As</u> 8.11	<u>Dev%</u> 0.00%	<u>Pass/Fail</u> Pass

Test Instruments Used During the Calibration					(As Of Cal Entry Date)	
<u>Test Standard ID</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Model Number</u>	<u>Serial Number / Lot Number</u>	<u>Next Cal Date / Last Cal Date/ Expiration Date</u>	<u>Opened Date</u>
NJ AUTOCAL: C579158	Auto Cal Solution: 4.01 GFS PH / 0.0 NTU / 4.49 mS/cm		AUTO CAL. 8483	C579158	8/3/2015	4/30/2016
NJ COND 5K: 5AB057	Conductivity 5000 uS/cm	AquaPhoenix Scientific	5000	5AB057	4/30/2015	2/29/2016
NJ COND 718: 5AB053	Conductivity 718 uS/cm	AquaPhoenix Scientific	718	5AB053	8/3/2015	2/28/2016
NJ COND 80K: 4AJ389	Conductivity 80K uS/cm	AquaPhoenix Scientific	80,000	4AJ389	8/3/2015	10/31/2015
NJ DO ZERO: 2012073047	HORIBA SODIUM SULFITE	EMD	SX07853	2012073047	1/7/2015	1/7/2016
NJ ORP 240 MV: 8039	ORP solution 240mv	Hanna	240Mv	8039	6/30/2015	9/30/2019
NJ PH7: 5AD425	BUFFER, PH7 YELLOW	AquaPhoenix Scientific	PH7	5AD425	7/30/2015	4/30/2017
NJ TURB 800 201046-4	Turbidity 800 NTU	Horiba		201046-4		

Notes about this calibration

Calibration Result Calibration Successful

Who Calibrated Lawrence Fischer



INSTRUMENT CALIBRATION REPORT

Pine Environmental Services, LLC.

92 North Main St, Building 20
Windsor, NJ 08561
Toll-free: (800) 301-9663

Pine Environmental Services, Inc.

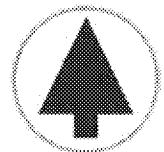
Instrument ID 21084

Description Horiba U-52

Calibrated 8/21/2015 2:48:19PM

All instruments are calibrated by Pine Environmental Services, LLC. according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

**Notify Pine Environmental Services, LLC. of any defect within 24 hours of receipt of equipment
Please call 866-960-7463 for Technical Assistance**



INSTRUMENT CALIBRATION REPORT

Pine Environmental Services, LLC.

92 North Main St, Building 20
Windsor, NJ 08561
Toll-free: (800) 301-9663

Pine Environmental Services, Inc.

Instrument ID 16612

Description MultiRAE Plus

Calibrated 8/21/2015 1:44:36PM

Manufacturer	Rae Systems	State Certified
Model Number	PGM50-5P	Status Pass
Serial Number/ Lot	095-527379	Temp °C 25
Number		
Location	New Jersey	Humidity % 42
Department		

Calibration Specifications

Group # 1
Group Name CO
Stated Accy Pct of Reading

Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
50 / 50	PPM	50	PPM	50	50	0.00%	Pass

Group # 2
Group Name H2S
Stated Accy Pct of Reading

Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
25 / 25	PPM	25	PPM	25	25	0.00%	Pass

Group # 3
Group Name Methane
Stated Accy Pct of Reading

Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
50 / 50	%LEL	50	%LEL	49	51	2.00%	Pass

Group # 4
Group Name Oxygen
Stated Accy Pct of Range

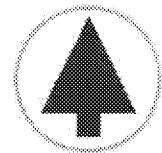
Range Acc % 3.0000
Reading Acc % 0.0000
Plus/Minus 0.0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
20.9 / 20.9	%Volume	20.9	%Volume	20.9	20.9	0.00%	Pass
18.0 / 18.0	%Volume	18.0	%Volume	18.0	18.0	0.00%	Pass

Group # 5
Group Name Isobutlyene
Stated Accy Pct of Reading

Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.0

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
100.0 / 100.0	PPM	100.0	PPM	98.0	98.0	-2.00%	Pass



INSTRUMENT CALIBRATION REPORT

Pine Environmental Services, LLC.

92 North Main St, Building 20
Windsor, NJ 08561
Toll-free: (800) 301-9663

Pine Environmental Services, Inc.

Instrument ID 16612

Description MultiRAE Plus

Calibrated 8/21/2015 1:44:36PM

<u>Test Instruments Used During the Calibration</u>					<u>(As Of Cal Entry Date)</u>	
<u>Test Standard ID</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Model Number</u>	<u>Serial Number / Lot Number</u>	<u>Next Cal Date / Last Cal Date/ Expiration Date</u>	<u>Opened Date</u>
NJ 100PPM 0206FD14	NJ ISO 100 PPM 34L	Pine Environmental Services, Inc.	GP11012	0206FD14		1/23/2018
NJ 20.9% : FAP-412-4	4GAS 20.9% O2, 25H2S, 50CO, 50LEL	Pine Environmental Services, Inc.	GP12089	FAP-412-4		9/10/2016

Notes about this calibration

Calibration Result Calibration Successful

Who Calibrated Cesar Sanchez

All instruments are calibrated by Pine Environmental Services, LLC. according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

Notify Pine Environmental Services, LLC. of any defect within 24 hours of receipt of equipment

Please call 866-960-7463 for Technical Assistance

ATTACHMENT 4
SUMMARY TABLES OF FIELD DATA

Table 1: Summary Table of Sediments			Matrix Sample ID	NJDEP Residential Direct Contact Soil Cleanup (RDCSCC) ¹	Sediment					
Lab Analytical Method	CAS RN	Chemical Name	Units		Concentrations ²	Qualifiers	Concentrations ²	Qualifiers	Concentrations ²	Qualifiers
Sediment Quality Method: D2974, D2216, E353.2, E365.1, SW9253, SW9030B, and SW9038	FOC	Fraction of Organic Carbon	% dry wt.		0.57		0.5		0.49	
	OCON	Organic Content	% dry wt.		0.99		0.86		0.85	
	10-02-6	Percent Solids	% dry wt.		81.2		78.2		84.1	
	NO3NO2N	Nitrogen, Nitrate-Nitrite (as N)	mg/kg		3.9 U		3.9 U		3.9 U	
	PORTHO	Phosphorus, Total Orthophosphate	mg/kg		1.9 U		7.3		2.8	
	16887-00-6	Chloride	mg/kg		1 U		350		2500	
	18496-25-8	Sulfide	mg/kg		3.9		2.8		110	
	14808-79-8	Sulfate	mg/kg		500		600		1100	
Pesticides Method: CLP CPEST	1024-57-3	HEPTACHLOR EPOXIDE	mg/kg		0.0021 U		0.0021 U		0.0021 U	
	1031-07-8	ENDOSULFAN SULFATE	mg/kg		0.0041 U		0.0042 U		0.004 U	
	309-00-2	ALDRIN	mg/kg	0.04	0.0021 U		0.0021 U		0.0021 U	
	319-84-6	ALPHA-BHC	mg/kg		0.0021 U		0.0021 U		0.0021 U	
	319-85-7	BETA-BHC	mg/kg		0.0021 U		0.0021 U		0.0021 U	
	319-86-8	DELTA-BHC	mg/kg		0.0021 U		0.0021 U		0.0021 U	
	33213-65-9	ENDOSULFAN II	mg/kg		0.0041 U		0.0042 U		0.004 U	
	50-29-3	4,4-DDT	mg/kg	2	0.0041 U		0.0042 U		0.004 U	
	5103-71-9	CIS-CHLORDANE	mg/kg		0.0021 U		0.0021 U		0.0021 U	
	5103-74-2	TRANS-CHLORDANE	mg/kg		0.0021 U		0.0021 U		0.0021 U	
	53494-70-5	ENDRIN KETONE	mg/kg		0.0041 U		0.0042 U		0.004 U	
	58-89-9	GAMMA-BHC (LINDANE)	mg/kg	0.52	0.0021 U		0.0021 U		0.0021 U	
	60-57-1	DIELDRIN	mg/kg	0.042	0.0041 U		0.0042 U		0.004 U	
	72-20-8	Endrin	mg/kg	17	0.0041 U		0.0042 U		0.004 U	
	72-43-5	METHOXYCHLOR	mg/kg	280	0.021 U		0.022 U		0.021 U	
	72-54-8	4,4-DDD	mg/kg	3	0.0041 U		0.0042 U		0.004 U	
	72-55-9	4,4-DDE	mg/kg	2	0.0041 U		0.0042 U		0.004 U	
	7421-93-4	ENDRIN ALDEHYDE	mg/kg		0.0041 U		0.0042 U		0.004 U	
	76-44-8	HEPTACHLOR	mg/kg	0.15	0.0021 U		0.0021 U		0.0021 U	
	8001-35-2	TOXAPHENE	mg/kg	0.1	0.21 U		0.21 U		0.21 U	
	959-98-8	ENDOSULFAN I	mg/kg		0.0021 U		0.0021 U		0.0021 U	
Metals Methods: E200.7, E200.8, E245.5, and E335.2	7429-90-5	Aluminum	mg/kg		3720		2950		3000	
	7439-89-6	Iron	mg/kg		9330		7350		8130	
	7439-95-4	Magnesium	mg/kg		4020		5210		1460	
	7440-09-7	Potassium	mg/kg		1480		1440		1590	
	7440-23-5	Sodium	mg/kg		643 U		624 U		1920	
	7440-70-2	Calcium	mg/kg		16900		21400		7230	
	7439-92-1	Lead	mg/kg	400	2.9		6.5		6	
	7439-96-5	Manganese	mg/kg		59.6		53.7		57.6	
	7440-02-0	Nickel	mg/kg	250	4.8		4.3		5.6	
	7440-22-4	Silver	mg/kg	110	0.61 U		0.62 U		0.63 U	
	7440-28-0	Thallium	mg/kg	2	0.61 U		0.62 U		0.63 U	
	7440-36-0	Antimony	mg/kg	14	1.2 U		1.2 U		1.3 U	
	7440-38-2	Arsenic	mg/kg	20	2.7		2.6		2.3	
	7440-39-3	Barium	mg/kg	700	9.5		7.9		6.7	
	7440-41-7	Beryllium	mg/kg	2	0.61 U		0.62 U		0.25 J	
	7440-43-9	Cadmium	mg/kg	39	0.61 U		0.62 U		0.63 U	
	7440-47-3	Chromium	mg/kg		11.4 J		22.1		10.6	
	7440-48-4	Cobalt	mg/kg		2.1		1.6		2.2	
	7440-50-8	Copper	mg/kg	600	8.5 J		9.2		6.5	
	7440-62-2	Vanadium	mg/kg	370	6.9		8		8.4	
	7440-66-6	Zinc	mg/kg	1500	12.2 J		15.3		18.6	
	7782-49-2	Selenium	mg/kg	63	3 U		3.1 U		3.2 U	
	7439-97-6	Mercury	mg/kg	14	0.018 J		0.048 J		0.053 J	
	57-12-5	Cyanide	mg/kg	1100	0.028 J		0.022 J		0.05 J	
PCB Aroclors Method: E608	11096-82-5	AROCLOL-1260	mg/kg		0.041 U		0.042 U		0.04 U	
	11097-69-1	AROCLOL-1254	mg/kg		0.041 U		0.042 U		0.04 U	
	11100-14-4	AROCLOL-1268	mg/kg		0.041 U		0.042 U		0.04 U	
	11104-28-2	AROCLOL-1221	mg/kg		0.041 U		0.042 U		0.04 U	
	11141-16-5	AROCLOL-1232	mg/kg		0.041 U		0.042 U		0.04 U	
	12672-29-6	AROCLOL-1248	mg/kg		0.041 U		0.042 U		0.04 U	
	12674-11-2	AROCLOL-1016	mg/kg		0.041 U		0.042 U		0.04 U	
	37324-23-5	AROCLOL-1262	mg/kg		0.041 U		0.042 U		0.04 U	
	53469-21-9	AROCLOL-1242	mg/kg		0.041 U		0.042 U		0.04 U	
VOC Method: E624	100-41-4	Ethylbenzene	mg/kg	1000	0.0061 U		0.0059 U		0.0057 U	
	100-42-5	Styrene	mg/kg	23	0.0061 U		0.0059 U		0.0057 U	
	10061-01-5	cis-1,3-Dichloropropene	mg/kg		0.0061 U		0.0059 U		0.0057 U	
	10061-02-6	trans-1,3-Dichloropropene	mg/kg		0.0061 U		0.0059 U		0.0057 U	
	106-46-7	1,4-Dichlorobenzene	mg/kg	570	0.0061 U		0.0059 U		0.0057 U	
	106-93-4	1,2-Dibromoethane	mg/kg		0.0061 UJ		0.0059 U		0.0057 U	
	107-06-2	1,2-Dichloroethane	mg/kg	6	0.0061 UJ		0.0059 U		0.0057 U	
	108-10-1	4-Methyl-2-pentanone	mg/kg	1000	0.012 U		0.012 U		0.011 U	
	108-87-2	Methylcyclohexane	mg/kg		0.0061 U		0.0059 U		0.0057 U	
	108-88-3	Toluene	mg/kg	1000	0.0061 U		0.0059 U		0.0057 U	
	108-90-7	Chlorobenzene	mg/kg	37	0.0061 U		0.0059 U		0.0057 U	
	110-82-7	Cyclohexane	mg/kg		0.0061 U		0.0059 U		0.0057 U	
	120-82-1	1,2,4-trichlorobenzene	mg/kg	68	0.0061 U	</td				

Table 1: Summary Table of Sediments				Matrix Sample ID	NJDEP Residential Direct Contact Soil Cleanup (RDCSCC) ¹	Sediment							
Lab Analytical Method	CAS RN	Chemical Name	Units			EPA-RUTPARK-SED01		EPA-RUTPARK-SED02		EPA-RUTPARK-SED03			
						Concentrations ²	Qualifiers	Concentrations ²	Qualifiers	Concentrations ²	Qualifiers		
SVOC Method: E625	74-97-5	Bromochloromethane	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	75-00-3	Chloroethane	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	75-01-4	Vinyl chloride	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	75-09-2	Methylene chloride	mg/kg			0.0061	UJ	0.0059	U	0.0057	U		
	75-15-0	Carbon Disulfide	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	75-25-2	Bromoform	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	75-27-4	Bromodichloromethane	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	75-34-3	1,1-Dichloroethane	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	75-35-4	1,1-Dichloroethene	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	75-69-4	Trichlorofluoromethane	mg/kg			0.0061	UJ	0.0059	U	0.0057	U		
	75-71-8	Dichlorodifluoromethane	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg			0.0061	UJ	0.0059	U	0.0057	U		
	78-87-5	1,2-Dichloropropane	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	78-93-3	2-Butanone	mg/kg			0.012	U	0.012	U	0.011	U		
	79-00-5	1,1,2-Trichloroethane	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	79-01-6	Trichloroethene	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	79-20-9	Methyl Acetate	mg/kg			0.0061	UJ	0.0059	U	0.0057	U		
	79-34-5	1,1,2,2-Tetrachloroethane	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	87-61-6	1,2,3-Trichlorobenzene	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	95-47-6	o-xylene	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	95-50-1	1,2-Dichlorobenzene	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	96-12-8	1,2-Dibromo-3-Chloroproppane	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	98-82-8	Isopropylbenzene	mg/kg			0.0061	U	0.0059	U	0.0057	U		
	100-01-6	4-Nitroaniline	mg/kg			0.41	U	0.42	U	0.4	U		
SVOC Method: E625	100-02-7	4-Nitrophenol	mg/kg			0.41	U	0.42	U	0.4	U		
	100-52-7	Benzaldehyde	mg/kg			0.41	U	0.42	U	0.4	U		
	101-55-3	4-Bromophenyl-phenylether	mg/kg			0.21	U	0.21	U	0.21	U		
	105-60-2	Caprolactam	mg/kg			0.15	J	0.11	J	0.1	J		
	105-67-9	2,4-Dimethylphenol	mg/kg			1100	0.21	U	0.21	U	0.21	U	
	106-44-5	4-Methylphenol	mg/kg			2800	0.41	U	0.42	U	0.4	U	
	106-47-8	4-Chloroaniline	mg/kg			230	0.41	U	0.42	U	0.4	U	
	108-60-1	2,2-oxybis(1-Chloropropane)	mg/kg			2300	0.41	U	0.42	U	0.4	U	
	108-95-2	Phenol	mg/kg			10000	0.41	U	0.42	U	0.4	U	
	111-44-4	Bis(2-Chloroethyl)ether	mg/kg			0.66	0.41	U	0.42	U	0.4	U	
	111-91-1	Bis(2-Chloroethoxy)methane	mg/kg				0.21	U	0.21	U	0.21	U	
	117-81-7	Bis(2-ethylhexyl)phthalate	mg/kg			49	0.072	J	0.053	J	0.21	U	
	117-84-0	Di-n-octyl phthalate	mg/kg			1100	0.41	U	0.42	U	0.4	U	
	118-74-1	Hexachlorobenzene	mg/kg			0.66	0.21	U	0.21	U	0.21	U	
	120-12-7	Anthracene	mg/kg			10000	0.21	U	0.21	U	0.21	U	
	120-83-2	2,4-Dichlorophenol	mg/kg			170	0.21	U	0.21	U	0.21	U	
	121-14-2	2,4-Dinitrotoluene	mg/kg				0.21	U	0.21	U	0.21	U	
	123-91-1	1,4-Dioxane	mg/kg				0.084	UJ	0.085	UJ	0.082	UJ	
	129-00-0	Pyrene	mg/kg			1700	0.21	U	0.21	U	0.21	U	
	131-11-3	Dimethylphthalate	mg/kg			10000	0.62		0.52		0.28		
	132-64-9	Dibenzofuran	mg/kg				0.21	U	0.21	U	0.21	U	
	1912-24-9	Atrazine	mg/kg				0.41	U	0.42	U	0.4	U	
	191-24-2	Benzo(g,h,i)perylene	mg/kg				0.21	U	0.21	U	0.21	U	
	193-39-5	Indeno(1,2,3-cd)pyrene	mg/kg			0.9	0.21	U	0.21	U	0.21	U	
	205-99-2	Benzo(B)Fluoranthene	mg/kg			0.9	0.21	U	0.21	U	0.21	U	
	206-44-0	Fluoranthene	mg/kg			2300	0.21	U	0.21	U	0.21	U	
	207-08-9	Benzo(k)fluoranthene	mg/kg			0.9	0.21	U	0.21	U	0.21	U	
	208-96-8	Acenaphthylene	mg/kg				0.21	U	0.21	U	0.21	U	
	218-01-9	Chrysene	mg/kg			9	0.21	U	0.21	U	0.21	U	
	50-32-8	Benzo(A)Pyrene	mg/kg			0.66	0.21	U	0.21	U	0.21	U	
	51-28-5	2,4-Dinitrophenol	mg/kg			110	0.41	U	0.42	U	0.4	U	
	534-52-1	4,6-Dinitro-2-Methylphenol	mg/kg				0.41	UJ	0.42	U	0.4	U	
	53-70-3	Dibenzo(a,h)anthracene	mg/kg			0.66	0.21	U	0.21	U	0.21	U	
	56-55-3	Benzo(a)anthracene	mg/kg			0.9	0.21	U	0.21	U	0.21	U	
	58-90-2	2,3,4,6-Tetrachlorophenol	mg/kg				0.21	U	0.21	U	0.21	U	
	59-50-7	4-Chloro-3-methylphenol	mg/kg										

Table 1: Summary Table of Sediments				Matrix Sample ID	NJDEP Residential Direct Contact Soil Cleanup (RDCSCC) ¹	Sediment			
Lab Analytical Method	CAS RN	Chemical Name	Units			EPA-RUTPARK-SED01	EPA-RUTPARK-SED02	EPA-RUTPARK-SED03	
Herbicides Method: SW8151A	99-09-2	3-Nitroaniline	mg/kg		0.41 U	0.42 U	0.4 U		
	120-36-5	Dichloroprop	mg/kg		0.0408 U	0.0429 U	0.0419 U		
	1918-00-9	Dicamba	mg/kg		0.00408 U	0.00429 U	0.00419 U		
	75-99-0	Dalapon	mg/kg		0.102 U	0.107 U	0.105 U		
	88-85-7	Dinoseb	mg/kg		0.0204 U	0.0215 U	0.0209 U		
	93-65-2	MCPP	mg/kg		4.08 U	4.29 U	4.19 U		
	93-72-1	2,4,5-TP (Silvex)	mg/kg		0.00306 U	0.00322 U	0.00314 U		
	93-76-5	2,4,5-T	mg/kg		0.00408 U	0.00429 U	0.00419 U		
	94-74-6	MCPA	mg/kg		4.08 U	4.29 U	4.19 U		
	94-75-7	2,4-D	mg/kg		0.0408 U	0.0429 U	0.0419 U		
Total Petroleum Hydro Methods: 8015/8260	94-82-6	2,4-DB	mg/kg		0.0408 U	0.0429 U	0.0331 J		
	DRO	Diesel Range Organics	mg/kg		13	30	17		
	GRO	Gasoline Range Organics	mg/kg		0.18 J	0.21 J	0.19 J		

Notes:

¹ NJDEP Residential Direct Contact Soil Cleanup (RDCSCC) was obtained from <http://www.nj.gov/dep/srp/guidance/scc/>. Residential criterion was taken to be the most conservative. Blank cell indicates no criterion.

² ***Bold italicize*** number indicates detected concentration (including J-flagged or estimated values).

Cell highlighted in light orange indicates concentration exceeds NJDEP RDCSCC.

Nondetected results (containing a U-qualifier flag) are presented in the table at the laboratory reporting limit.

Table 2: Summary Table of Groundwater				Matrix Sample ID	NJDEP Impact to Ground water Soil Cleanup Criteria (IGWSCC) ¹	Groundwater	
Lab Analytical Method	CAS RN	Chemical Name	Units			EPA-RUTPARK-GW01	Concentrations ²
Water Quality Methods: 300.0, 350.1, 353.2, 365.1, SW9045D, SW9310, SM4500S2, and SM5310C	14808-79-8	Sulfate	mg/L			5.4	
	18496-25-8	Sulfide	mg/L			0.089	
	16887-00-6	Chloride	mg/L			200	
	57-12-5	Cyanide, Total	mg/L			0.01	U
	7727-37-9	Ammonia [As N]	mg/L			0.96	
	7727-37-9	Nitrate [As N]	mg/L			0.5	U
	7727-37-9	Nitrite [As N]	mg/L			1.2	
	14265-44-2	Orthophosphate [As P]	mg/L			0.032	L
	7723-14-0	Phosphorus	mg/L			0.05	U
	12587-46-1	Gross Alpha	pCi/L			2.64	
	12587-47-2	Gross Beta	pCi/L			4.19	
	pH	pH	pH			12.4	
	10-19-5	Organic Carbon	mg/L			2.9	
Metals Methods: E200.8, E200.7, E245.1, and 335.4	7429-90-5	Aluminum	mg/L			2.2	
	7439-92-1	Lead	mg/L			0.001	U
	7439-96-5	Manganese	mg/L			0.001	U
	7440-02-0	Nickel	mg/L			0.0012	
	7440-22-4	Silver	mg/L			0.001	U
	7440-28-0	Thallium	mg/L			0.001	U
	7440-36-0	Antimony	mg/L			0.001	U
	7440-38-2	Arsenic	mg/L			0.0013	
	7440-39-3	Barium	mg/L			0.027	
	7440-41-7	Beryllium	mg/L			0.001	U
	7440-43-9	Cadmium	mg/L			0.001	U
	7440-47-3	Chromium	mg/L			0.01	
	7440-48-4	Cobalt	mg/L			0.001	U
	7440-50-8	Copper	mg/L			0.001	U
	7440-62-2	Vanadium	mg/L			0.0036	
	7440-66-6	Zinc	mg/L			0.003	UJ
	7782-49-2	Selenium	mg/L			0.001	U
	7439-89-6	Iron	mg/L			0.05	U
	7439-95-4	Magnesium	mg/L			0.5	U
	7440-09-7	Potassium	mg/L			10	
	7440-23-5	Sodium	mg/L			130	
	7440-70-2	Calcium	mg/L			240	
	7439-97-6	Mercury	mg/L			0.0002	U
	57-12-5	Cyanide, Total	mg/L			0.01	U
VOC Method: E524.2	100-41-4	Ethylbenzene	mg/L	100		0.0056	
	100-42-5	Styrene	mg/L	100		0.0005	U
	10061-01-5	cis-1,3-Dichloropropene	mg/L			0.0005	U
	10061-02-6	trans-1,3-Dichloropropene	mg/L			0.0005	U
	106-46-7	1,4-Dichlorobenzene	mg/L	100		0.0047	
	106-93-4	1,2-Dibromoethane	mg/L			0.0005	U
	107-06-2	1,2-Dichloroethane	mg/L	1		0.0005	U
	108-10-1	4-Methyl-2-pentanone	mg/L	50		0.005	U
	108-87-2	Methylcyclohexane	mg/L			0.0005	U
	108-88-3	Toluene	mg/L	500		0.013	
	108-90-7	Chlorobenzene	mg/L	1		0.057	
	110-82-7	Cyclohexane	mg/L			0.0005	U
	120-82-1	1,2,4-trichlorobenzene	mg/L	100		0.0005	U
	124-48-1	Dibromochloromethane	mg/L	1		0.0005	U
	127-18-4	Tetrachloroethene	mg/L	1		0.0005	U
	1330-20-7	m/p-Xylene	mg/L	67		0.0088	
	156-59-2	cis-1,2-Dichloroethene	mg/L	1		0.0015	
	156-60-5	trans-1,2-Dichloroethene	mg/L	50		0.00061	
	1634-04-4	Methyl tert-butyl Ether	mg/L			0.0005	U
	541-73-1	1,3-Dichlorobenzene	mg/L	100		0.002	
	56-23-5	Carbon tetrachloride	mg/L	1		0.0005	U
	591-78-6	2-Hexanone	mg/L			0.005	U
	67-64-1	Acetone	mg/L	100		0.0091	
	67-66-3	Chloroform	mg/L	1		0.0005	U
	71-43-2	Benzene	mg/L	1		0.025	
	71-55-6	1,1,1-Trichloroethane	mg/L	50		0.0005	U
	74-83-9	Bromomethane	mg/L	1		0.0005	U
	74-87-3	Chloromethane	mg/L	10		0.0005	U
	74-97-5	Bromoform	mg/L			0.0005	U
	75-00-3	Chloroethane	mg/L			0.0005	U
	75-01-4	Vinyl chloride	mg/L	10		0.00096	
	75-09-2	Methylene chloride	mg/L	1		0.0005	U
	75-15-0	Carbon Disulfide	mg/L			0.0005	U
	75-25-2	Bromoform	mg/L	1		0.0005	U
	75-27-4	Bromodichloromethane	mg/L	1		0.0005	U
	75-34-3	1,1-Dichloroethane	mg/L	10		0.0005	U
	75-35-4	1,1-Dichloroethene	mg/L	10		0.0005	U
	75-69-4	Trichlorofluoromethane	mg/L			0.0005	U
	75-71-8	Dichlorodifluoromethane	mg/L			0.0005	U

Table 2: Summary Table of Groundwater				Matrix Sample ID	NJDEP Impact to Ground water Soil Cleanup Criteria (IGWSCC) ¹	Groundwater	
Lab Analytical Method	CAS RN	Chemical Name	Units			EPA-RUTPARK-GW01	Concentrations ²
	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	mg/L			0.0005	U
	78-87-5	1,2-Dichloropropane	mg/L			0.0005	U
	78-93-3	2-Butanone	mg/L	50		0.005	U
	79-00-5	1,1,2-Trichloroethane	mg/L	1		0.0005	U
	79-01-6	Trichloroethene	mg/L	1		0.0005	U
	79-20-9	Methyl Acetate	mg/L			0.0005	U
	79-34-5	1,1,2,2-Tetrachloroethane	mg/L	1		0.0005	U
	87-61-6	1,2,3-Trichlorobenzene	mg/L			0.0005	U
	95-47-6	o-xylene	mg/L			0.0034	
	95-50-1	1,2-Dichlorobenzene	mg/L	50		0.0076	
	96-12-8	1,2-Dibromo-3-Chloropropane	mg/L			0.0005	U
	98-82-8	Isopropylbenzene	mg/L			0.0005	U
PCB and Pesticides	12674-11-2	Aroclor 1016	mg/L	50		0.000003	UL
Method: E608	11104-28-2	Aroclor 1221	mg/L	50		0.000006	UL
	11141-16-5	Aroclor 1232	mg/L	50		0.000003	UL
	53469-21-9	Aroclor 1242	mg/L	50		0.000006	UL
	12672-29-6	Aroclor 1248	mg/L	50		0.000003	UL
	11097-69-1	Aroclor 1254	mg/L	50		0.000003	UL
	11096-82-5	Aroclor 1260	mg/L	50		0.000003	UL
	37324-23-5	Aroclor 1262	mg/L	50		0.000003	UL
	11100-14-4	Aroclor 1268	mg/L	50		0.000003	UL
	8001-35-2	TOXAPHENE	mg/L	50		0.0001995	UL
	1024-57-3	HEPTACHLOR EPOXIDE	mg/L			0.0000027	UL
	1031-07-8	ENDOSULFAN SULFATE	mg/L			0.0000053	UL
	309-00-2	ALDRIN	mg/L	50		0.0000027	UL
	319-84-6	ALPHA-BHC	mg/L			0.0000027	UL
	319-85-7	BETA-BHC	mg/L			0.0000027	UL
	319-86-8	DELTA-BHC	mg/L			0.0000027	UL
	33213-65-9	ENDOSULFAN II	mg/L			0.0000053	UL
	50-29-3	4,4'-DDT	mg/L	500		0.0000053	UL
	5103-71-9	alpha-Chlordane	mg/L			0.0000027	UL
	5103-74-2	gamma-Chlordane	mg/L			0.0000027	UL
	53494-70-5	ENDRIN KETONE	mg/L			0.0000053	UL
	58-89-9	GAMMA-BHC (LINDANE)	mg/L	50		0.0000027	UL
	60-57-1	DIELDRIN	mg/L	50		0.0000053	UL
	72-20-8	Endrin	mg/L	50		0.0000053	UL
	72-43-5	METHOXYCHLOR	mg/L	50		0.0000266	UL
	72-54-8	4,4'-DDD	mg/L	50		0.0000053	UL
	72-55-9	4,4'-DDE	mg/L	50		0.0000053	UL
	7421-93-4	ENDRIN ALDEHYDE	mg/L			0.0000053	UL
	76-44-8	HEPTACHLOR	mg/L	50		0.0000027	UL
	959-98-8	ENDOSULFAN I	mg/L			0.0000027	UL
SVOC	100-01-6	4-Nitroaniline	mg/L			0.0053	U
Method: E625	100-02-7	4-Nitrophenol	mg/L			0.0053	U
	100-52-7	Benzaldehyde	mg/L			0.0053	U
	101-55-3	4-Bromophenyl-phenylether	mg/L			0.0053	U
	105-60-2	Caprolactam	mg/L			0.0053	U
	105-67-9	2,4-Dimethylphenol	mg/L	10		0.011	
	106-44-5	4-Methylphenol	mg/L			0.017	
	106-47-8	4-Chloroaniline	mg/L			0.0053	U
	108-60-1	Bis(2-Chloroisopropyl)Ether	mg/L	10		0.0053	U
	108-95-2	Phenol	mg/L	50		0.011	
	111-44-4	Bis(2-Chloroethyl)ether	mg/L	10		0.0053	U
	111-91-1	Bis(-2-Chloroethoxy)Methane	mg/L			0.0053	U
	117-81-7	Bis(2-ethylhexyl)phthalate	mg/L	100		0.0053	U
	117-84-0	Di-n-octyl phthalate	mg/L	100		0.0053	U
	118-74-1	Hexachlorobenzene	mg/L	100		0.0053	U
	120-12-7	Anthracene	mg/L	100		0.0053	U
	120-83-2	2,4-Dichlorophenol	mg/L	10		0.0053	U
	121-14-2	2,4-Dinitrotoluene	mg/L			0.0053	U
	123-91-1	1,4-Dioxane	mg/L			0.0021	U
	129-00-0	Pyrene	mg/L	100		0.0053	U
	131-11-3	Dimethyl Phthalate	mg/L	50		0.0053	U
	132-64-9	Dibenzofuran	mg/L			0.0069	
	1912-24-9	Atrazine	mg/L			0.0053	U
	191-24-2	Benzo(g,h,i)perylene	mg/L			0.0053	U
	193-39-5	Indeno(1,2,3-cd)pyrene	mg/L	500		0.0053	U
	205-99-2	Benzo(B)Fluoranthene	mg/L	50		0.0053	U
	206-44-0	Fluoranthene	mg/L	100		0.0053	U
	207-08-9	Benzo(k)fluoranthene	mg/L	500		0.0053	U
	208-96-8	Acenaphthylene	mg/L			0.0053	U
	218-01-9	Chrysene	mg/L	500		0.0053	U
	50-32-8	Benzo(A)Pyrene	mg/L	100		0.0053	U
	51-28-5	2,4-Dinitrophenol	mg/L	10		0.027	U
	534-52-1	4,6-Dinitro-2-Methylphenol	mg/L			0.011	U
	53-70-3	Dibenzo(a,h)anthracene	mg/L	100		0.0053	U

Table 2: Summary Table of Groundwater				Matrix Sample ID	NJDEP Impact to Ground water Soil Cleanup Criteria (IGWSCC) ¹	Groundwater	
Lab Analytical Method	CAS RN	Chemical Name	Units			Concentrations ²	Qualifiers
Herbicides Method: SW8151A	56-55-3	Benzo(a)anthracene	mg/L	500	0.0053	U	
	58-90-2	2,3,4,6-Tetrachlorophenol	mg/L		0.0053	U	
	59-50-7	4-Chloro-3-methylphenol	mg/L	100	0.0053	U	
	606-20-2	2,6-Dinitrotoluene	mg/L		0.0053	U	
	621-64-7	N-Nitroso-Di-N-Propylamine	mg/L	10	0.0053	U	
	62-75-9	N-Nitrosodimethylamine	mg/L		0.0053	U	
	67-72-1	Hexachloroethane	mg/L	100	0.0053	U	
	7005-72-3	4-Chlorophenyl-phenylether	mg/L		0.0053	U	
	77-47-4	Hexachlorocyclopentadiene	mg/L	100	0.0053	U	
	78-59-1	Isophorone	mg/L	50	0.0053	U	
	83-32-9	Acenaphthene	mg/L	100	0.012		
	84-66-2	Diethylphthalate	mg/L	50	0.0053	U	
	84-74-2	Di-N-Butyl Phthalate	mg/L	100	0.0053	U	
	85-01-8	Phenanthrene	mg/L		0.0053	U	
	85-68-7	Butylbenzylphthalate	mg/L	100	0.0053	U	
	86-30-6	N-Nitrosodiphenylamine	mg/L	100	0.0053	U	
	86-73-7	Fluorene	mg/L	100	0.0061		
	86-74-8	Carbazole	mg/L		0.0062		
	87-68-3	Hexachlorobutadiene	mg/L	100	0.0053	U	
	87-86-5	Pentachlorophenol	mg/L	100	0.0053	U	
	88-06-2	2,4,6-Trichlorophenol	mg/L	10	0.0053	U	
	88-74-4	2-Nitroaniline	mg/L		0.0053	U	
	88-75-5	2-Nitrophenol	mg/L		0.0053	U	
	91-20-3	Naphthalene	mg/L	100	0.43		
	91-57-6	2-Methylnaphthalene	mg/L		0.02		
	91-58-7	2-Chloronaphthalene	mg/L		0.0053	U	
	91-94-1	3,3'-Dichlorobenzidine	mg/L	100	0.0053	U	
	92-52-4	Biphenyl	mg/L		0.0053	U	
	95-48-7	2-Methylphenol	mg/L		0.011		
	95-57-8	2-Chlorophenol	mg/L	10	0.0053	U	
	95-94-3	1,2,4,5-Tetrachlorobenzene	mg/L		0.0053	U	
	95-95-4	2,4,5-Trichlorophenol	mg/L	50	0.0053	U	
	98-86-2	Acetophenone	mg/L		0.0053	U	
	98-95-3	Nitrobenzene	mg/L	10	0.0053	U	
	99-09-2	3-Nitroaniline	mg/L		0.0053	U	
Total Petroleum Hydrocarbons Methods: SW8015 and SW8260	DRO	Diesel Range Organics	mg/L			7.8 J	
	GRO	Gasoline Range Organics	mg/L			0.39	

Notes:

¹ NJDEP Impact to Ground water Soil Cleanup Criteria (IGWSCC) was obtained from <http://www.nj.gov/dep/srp/guidance/scc/>. Blank cell indicates no criterion.

² ***Bold italicize*** number indicates detected concentration (including J-flagged or estimated values).

Cell highlighted in light orange indicates concentration exceeds NJDEP RDCSCC.

Nondetected results (containing a U-qualifier flag) are presented in the table at the laboratory reporting limit.

Table 3: Summary Table of Waste Characteristics				Matrix Sample ID	40CFR Part 261 Regulations for Waste ¹	Sediment	
Lab Analytical Method	CAS RN	Chemical Name	Units			EPA-RUTPARK-SED01	Concentrations ²
TCLP Pesticides Method: CLP CPEST	1024-57-3	HEPTACHLOR EPOXIDE	ug/L	8		0.05	U
	5103-71-9	CIS-CHLORDANE	ug/L	30		0.05	U
	5103-74-2	TRANS-CHLORDANE	ug/L	30		0.05	U
	58-89-9	GAMMA-BHC (LINDANE)	ug/L	400		0.05	U
	72-43-5	METHOXYCHLOR	ug/L	10,000		0.5	U
	76-44-8	HEPTACHLOR	ug/L	8		0.05	U
	8001-35-2	TOXAPHENE	ug/L	500		5	U
TCLP Metals Methods: E200.7 and E245.2	7439-92-1	Lead	mg/L	5		0.01	U
	7440-22-4	Silver	mg/L	5		0.01	U
	7440-38-2	Arsenic	mg/L	5		0.0051	J
	7440-39-3	Barium	mg/L	100		0.17	J
	7440-43-9	Cadmium	mg/L	1		0.05	U
	7440-47-3	Chromium	mg/L	5		0.0024	J
	7782-49-2	Selenium	mg/L	1		0.0069	J
	7439-97-6	Mercury	mg/L	0.2		0.002	U
TCLP VOC Method: E624	106-46-7	1,4-Dichlorobenzene	ug/L	7,500		5	U
	107-06-2	1,2-Dichloroethane	ug/L	500		5	U
	108-90-7	Chlorobenzene	ug/L	100,000		5	U
	127-18-4	Tetrachloroethene	ug/L	700		5	U
	56-23-5	Carbon tetrachloride	ug/L	500		5	U
	67-66-3	Chloroform	ug/L	6,000		5	U
	71-43-2	Benzene	ug/L	500		5	U
	75-01-4	Vinyl chloride	ug/L	200		5	U
	75-35-4	1,1-Dichloroethene	ug/L	700		5	U
	78-93-3	2-Butanone	ug/L	200,000		10	U
	79-01-6	Trichloroethene	ug/L	500		5	U
TCLP SVOC Method: E625	106-44-5	4-Methylphenol	ug/L	200,000		10	U
	121-14-2	2,4-Dinitrotoluene	ug/L	130		5	U
	67-72-1	Hexachloroethane	ug/L	3,000		5	U
	87-68-3	Hexachlorobutadiene	ug/L	500		5	U
	88-06-2	2,4,6-Trichlorophenol	ug/L	2,000		5	U
	95-48-7	2-Methylphenol	ug/L	200,000		10	U
	95-95-4	2,4,5-Trichlorophenol	ug/L	400,000		5	U
	98-95-3	Nitrobenzene	ug/L	2,000		5	U
TCLP Herbicide Method: SW8151A	93-72-1	2,4,5-TP (Silvex)	ug/L	1,000		2	U
	94-75-7	2,4-D	ug/L	10,000		20	U
Waste Characteristics	IGNITB	Flamability (Ignitability)	°F	<140		>30	
	CREAC	Reactive Cyanide	mg/kg	250		2	U
	SREAC	Reactive Sulfide	mg/kg	500		2	U
	pH	Corrosivity (pH)	pH at 25°C	<2 or >12.5		11.2	

Notes:

¹ Blank cell indicates no criterion.

² ***Bold italicize*** number indicates detected concentration (including J-flagged or estimated values).

Cell highlighted in light orange indicates concentration exceeds 40CFR Regulations for Waste.

Nondetected results (containing a U-qualifier flag) are presented in the table at the laboratory reporting limit.

Note that Endrin, Hexachlorobenzene, and Pentachlorophenol were not reported in the TCLP list; however, these three parameters had nondetected concentrations in the groundwater. M-Cresol and Pyridine were not reported in the TCLP list or groundwater parameter list.